MACHINEDRUM

SPS-1/SPS-1UW/SPS-1 MKII/SPS-1UW MKII/SPS-1UW+ MKII

USER'S MANUAL

Elektron

FCC compliance statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residentpial installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

European Union regulation compliance statement

This product has been tested to comply with the 2004/108/EC EMC Directive and the 72/23/EC Low Voltage directive.

This symbol indicates that your product must be disposed of properly according to local laws and regulations.

The included switched-mode power supply is CEC Level IV compliant.

The device contains a non rechargable lithium perchlorate battery cell that may need to be recycled separately depending on local environmental laws. If the battery needs replacing, please contact Elektron or a local professional technician for servicing.

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INTRODUCTION

Thank you for choosing the Machinedrum SPS-1/SPS-1UW/SPS-1 MKII/SPS-1UW MKII/ SPS-1UW+ MKII, Synthetic Percussion Sequencer. The Machinedrum is a powerful and intuitive tool for creating percussion sounds and rhythm sequences. The Elektron development team would like to take this opportunity to thank you for your choice of instrument. We hope that you will have a lot of fun while exploring the vast possibilities of the Machinedrum. To make the most of the machine, we would recommend you to carefully read this manual.

This manual is specifically written for the MKII versions of the Machinedrum family. However, although differences exist between the MKI and MKII models, this manual is also usable for MKI models. Please see “DIFFERENCES BETWEEN THE MKI AND MKII MODELS” on page 87 for more details on exactly what differs between the two models.

CONVENTIONS IN THIS MANUAL

In this manual, we have used certain conventions to indicate input operations using knobs and buttons and output from the user interface. These conventions are listed below:

Buttons are written in upper case with bold style, and they are enclosed in brackets. For instance, the button “function” on the main panel is written **[FUNCTION]**.

Menu names and certain modes of operation are written in upper case. The SYNTHESIS menu is an example of that.

Messages visible on the screen will be written in upper case with quotation marks. Like this, “RECEIVING DUMP”.

Bold style is used for parameter abbreviations, for example **PTCH,** and for certain settings, like **EXTERNAL**.

Knobs are written in upper case with bold, italic style. For instance, the knob “level” is written ***LEVEL***.

LED indicators like the record light are written <RECORD>.

The following symbols are used throughout the manual:

This symbol indicates information that you need to pay attention to.

This symbol indicates a tip that might make it easier interacting with the Machinedrum.

This symbol is not used, but it shows a nice ear.

THE STORY OF THE MACHINEDRUM

The Machinedrum is a music instrument that presents new methods for music synthesis and creation. It also traces its heritage to classic drum machines.

The drum machine concept is more than 30 years old. Around the same time that Bob Moog released his first commercial synthesizer for keyboard players, the first consumer drum machines were also made available. Although primitive in design with only pre-programmed patterns to offer, they laid the foundation for a new area of electronically aided music and sound creation.

What followed has formed a good part of the percussive basis for modern music. The drum machines from Roland (the TR-series), Linn and Simmons are legendary and highly regarded for their individual synthetic sound. The analogue drum machines were actually advanced synthesizers, specially designed for creating a specific percussive sound. Today respect is gained not by recreating the sound of an acoustic drum, but by adding to the tonal palette of percussion. The method of “grid programming” has also offered a creative approach to forming rhythms.

Percussion synthesis was a neglected area for many years. With the Machinedrum, we have incorporated the best ideas from the classic drum machines, using specially designed “machines” for many types of percussion, combined with new rhythm composing possibilities, to make it a state of the art drum synthesizer and sequencer.

For sample enabled versions of the Machinedrum, those with a UW acronym, where “UW” is short for “UserWave”, inspiration was drawn from the 12-bit samplers of the 1980’s, for example the EMU SP-1200. The sound from these instruments were often very characteristic and had a punch and grit that can be hard to obtain today. Combining samples with the ease of use and flexibility that the Machinedrum environment offers will vastly expand the sound shaping possibilities.

The Machinedrum UW versions also make it possible to explore new sonic territories as they contain real time sampling features. All this makes a Machinedrum UW an ideal companion for both forward-thinking DJ’s and beat composers looking for a unique sound.

MACHINEDRUM MAIN FEATURES

The Machinedrum is built from three parts - the percussion synthesizer, the effect system and the percussion sequencer.

The synthesizer holds 16 drum generating synthesizers - machines - simultaneously. Each of the machines is designed for creating a specific drum sound, such as bass drum or claves, from a set of parameters. A range of special machines are also available. The UW versions add the sample handling ROM and RAM machines.

The effect system consists of the TRACK EFFECT system and the STEREO MASTER EFFECT System. The TRACK EFFECT system supplies various effects tied to each audio track. These effects can be used tightly together with the machines to form the sound. The STEREO MASTER EFFECT system consists of a delay, a reverb, an EQ and a dynamics compressor. These effects operate on the mixed main output signal.

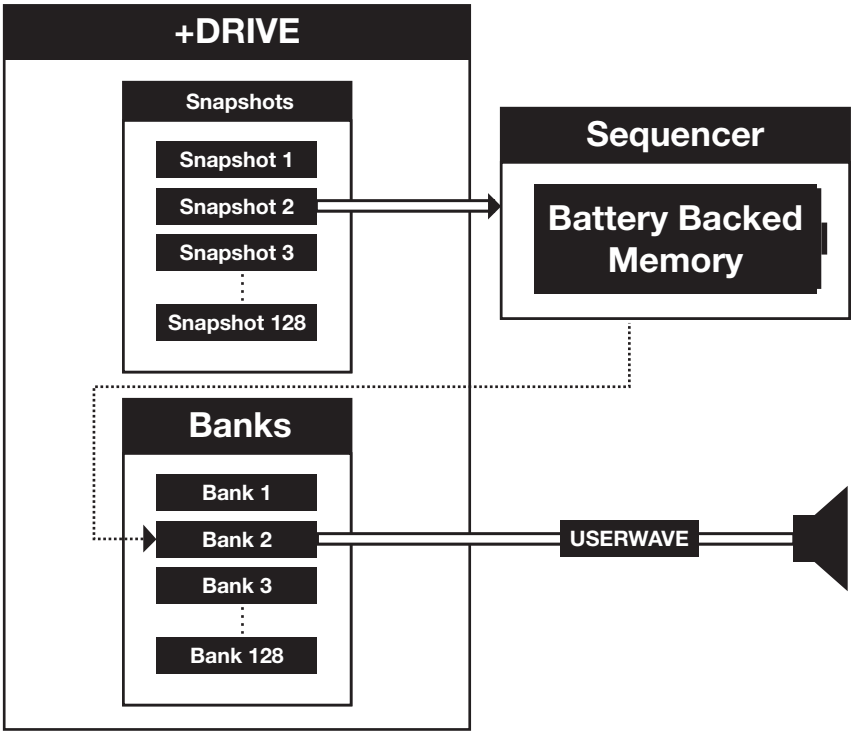
The percussion sequencer offers full control over the machines and the Track Effects.

+DRIVE FEATURES

The Machinedrum SPS-1UW+ MKII comes with the +Drive installed by default. A +Drive allows for thousands of patterns, sounds and songs to be stored internally and more or less instantly recalled. The +Drive also makes it possible for Machinedrum UW versions to host thousands of ROM samples organized in 128 Sample banks. All Machinedrum models can be upgraded with a +Drive. Read more about the +Drive settings on page 76.

The +Drive adds 128 Snapshots. A Machinedrum Snapshot can contain up to 128 patterns, 64 kits, 32 songs and 8 globals. If the Machinedrum is a UW model, each Snapshot is also linked to a Sample bank. A UW MKII Sample bank consists of 48 ROM sample slots. A UW MKI Sample bank consists of 32 ROM sample slots. Sample banks can be dynamically switched within a Snapshot.

When you load a Snapshot it is transferred to the Battery Backed Memory of the Machinedrum. From here you can edit the patterns, kits, songs and globals of the Snapshot. In the case of UW models, the Sample bank associated with the Snapshot is transferred to the DSP.



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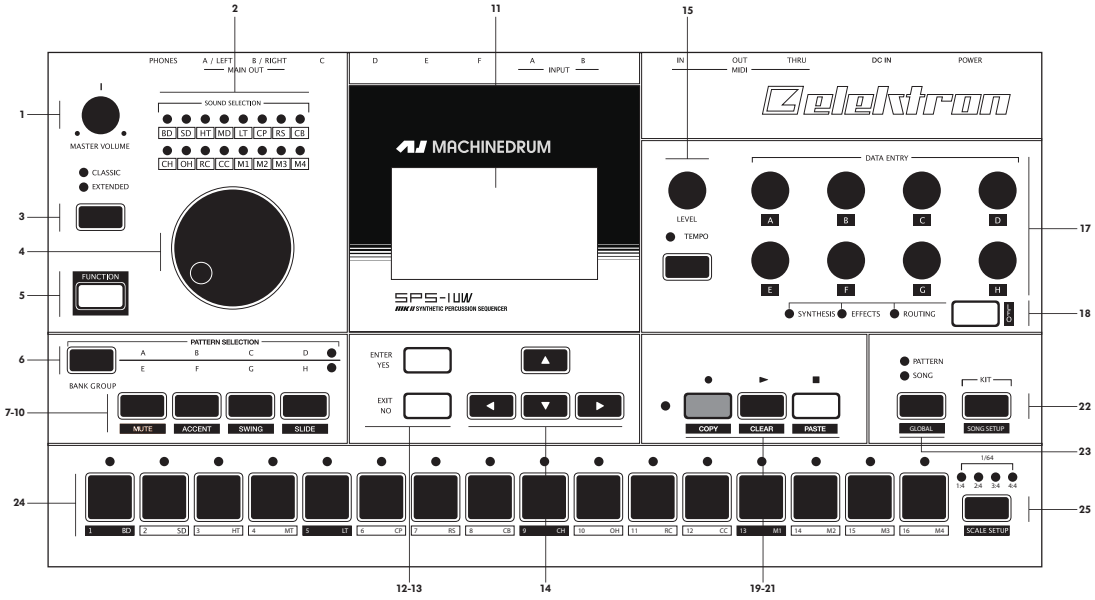
USER INTERFACE AND CONNECTORS

FRONT PANEL



The Machinedrum front panel:

1. Master volume control. Sets the volume for the main output and headphone jack.

2. The <SOUND SELECTION> LEDs. Used for indicating the current track in focus and for showing which tracks are triggered.

3. [CLASSIC/EXTENDED] mode change key. Changes current editing mode between CLASSIC and EXTENDED.

4. ***SOUND SELECTION*** wheel. Selects tracks and changes values during editing. You can also select tracks by holding the **[FUNCTION]** key while pressing the corresponding **[TRIG]** key. It is also used when scrolling in lists.

5. [FUNCTION] key. Press and hold it for accessing the secondary function of another key.

6. [BANK] key. Used for switching between bank group A to D and E to H.

7. [A/E] key. Hold this key while pressing one of the **[TRIG]** keys to select a pattern in either the A or the E bank, depending on which bank group is selected. The secondary function is track muting.

8. [B/F] key. Hold this key while pressing one of the **[TRIG]** keys to select a pattern in either the B or the F bank, depending on which bank group is selected. The secondary function is accent pattern editing.

9. [C/G] key. Hold this key while pressing one of the **[TRIG]** keys to select a pattern in either the C or the G bank, depending on which bank group is selected. The secondary function is the pattern swing settings.

10.[D/H] key. Hold this key while pressing one of the **[TRIG]** keys to select a pattern in either the D or the H bank, depending on which bank group is selected. The secondary function is slide pattern editing.

11. The LCD graphical interface.

12.[ENTER/YES] key. Used for entering sub-menus and for confirming choices.

13. **[EXIT/NO]** key. Used for exiting the current menu and for deselecting options.
14. The arrow keys. Used for menu navigation. They are called **[UP]**, **[DOWN]**, **[LEFT]** and **[RIGHT]**.
15. ***LEVEL*** knob. Sets the overall volume level of the track in focus.
16. **[TEMPO]** key. Brings up the tempo menu. The current tempo is always indicated by the speed the <TEMPO> LED is flashing.
17. ***DATA ENTRY*** knobs. Used for tweaking parameters for the machines and effects.
18. **[SYNTHESIS/EFFECTS/ROUTING]** toggle key. Switches the editing focus for the ***DATA ENTRY*** knobs. The active page is indicated by the <SYNTHESIS>, <EFFECTS> and <ROUTING> LEDs. The secondary function is calling the LFO edit menu.
19. **[RECORD]** key. Toggles grid edit mode on/off. Starts live recording if held while pressing **[PLAY]**. In GRID RECORDING mode, the <RECORD> LED gives a steady light, while in live recording it flashes. The secondary function is COPY.
20. **[PLAY]** key. Initiates playback of a pattern or song. Pressing **[PLAY]** a second time pauses playback. The secondary function is the CLEAR operation.
21. **[STOP]** key. Stops the playback of a pattern or song. The secondary function is PASTE.

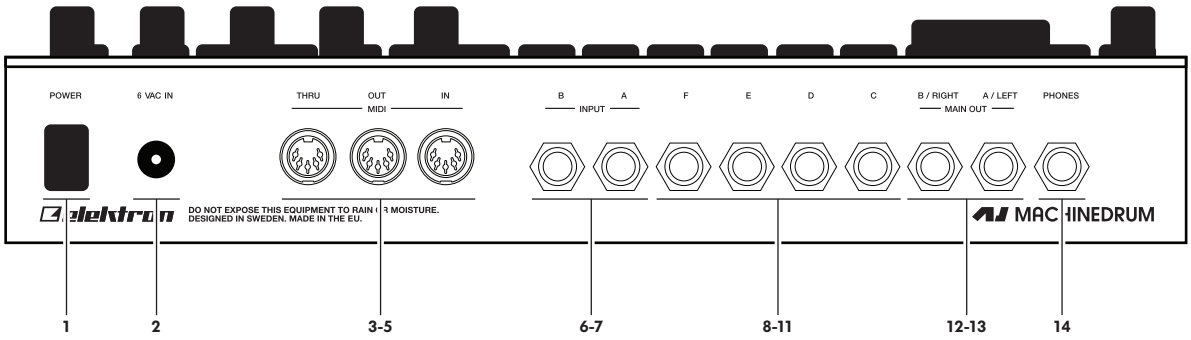
- **The copy, clear and paste functions are tied to different data depending on the context where they are used. Their use will be described in their respective parts of this manual.**

22. **[KIT]** key. Opens the KIT menu. The secondary function is opening the SONG menu. A **[FUNCTION]** + **[KIT]** long press will open the SELECT SAMPLE BANK menu.
23. **[PATTERN/SONG]** key. Switches between pattern and song sequencer mode. The current sequencer mode is indicated by the <PATTERN> and <SONG> LEDs. The secondary function is calling the GLOBAL EDIT menu. A **[FUNCTION]** + **[PATTERN/SONG]** long press will open the CHANGE/LOAD SNAPSHOT menu.
24. **[TRIG]** keys 1 to 16. Used for direct trigging of machine per track, and for placing notes in th GRID RECORDING and LIVE RECORDING modes. Also used for choosing pattern, if pressed while holding **[A-H]** keys. They are also used for selecting track when pressed while holding **[FUNCTION]**. Above each **[TRIG]** key is a <TRIG> LED.
25. **[SCALE SETUP]** key. Switches the editing focus of the **[TRIG]** keys between the different pattern pages, if the scale length is longer than 16 steps. Above the **[SCALE SETUP]** key the four <PATTERN PAGE> LEDs are placed. If for example 64 steps is used in a pattern, all four LEDs will be lit. The LEDs are used for indicating which page of the pattern currently being played or edited. Note that MKI units can have a maximum of 32 steps per pattern.

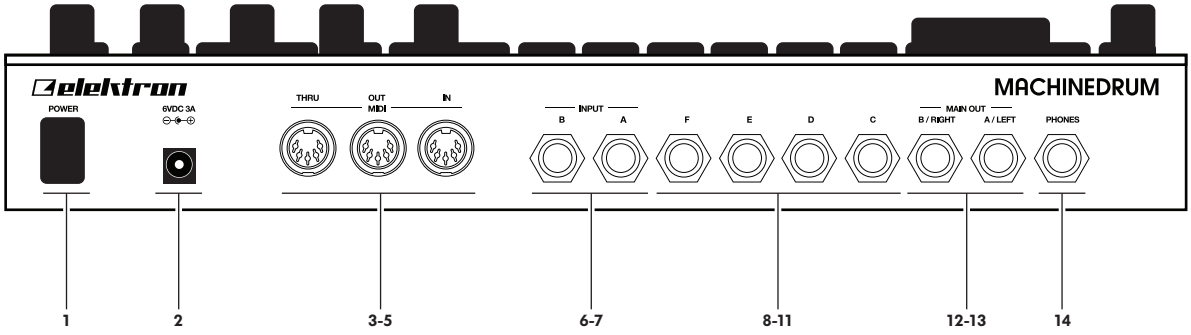
    For scale lengths up to 16 steps, the <1:4> LED will stay lit and pressing **[SCALE SETUP]** will have no effect. The secondary function of the **[SCALE SETUP]** key is calling the SCALE SETUP menu.

REAR CONNECTORS

SPS-1/SPS-1UW



SPS-1 MKII /SPS-1UW MKII



The Machinedrum rear connectors:

1. Power on/off switch.
2. 6V DC power in.

- **Caution! Use only an Elektron-approved power supply with your Machinedrum. A power supply is included with all MKII models. It can be used all over the globe without the need of voltage converters using an appropriate power cord. Using the wrong type of adapter may damage your unit. Damage caused by the use of incorrect power supply is not covered by warranty. Please see "TECHNICAL INFORMATION" on page 86 for details about the MKII power supply.**
- **Note that the MKI models require a different power supply compared to the MKII models. Please see "DIFFERENCES BETWEEN THE MKI AND MKII MODELS" on page 87 for details about the power supply to be used with the MKI models.**

3. MIDI Thru.
4. MIDI Out.
5. MIDI In.
6. Input B.
7. Input A.

8. Individual output F.
9. Individual output E.
10. Individual output D.
11. Individual output C.
12. Main out right / Individual output B.
13. Main out left / Individual output A.
14. Stereo headphones output.

RACK MOUNT KIT (ACCESSORY)

The Machinedrum can be rack mounted in a standard 19” rack, using the Machinedrum rack mount kit which is ordered separately. When rack mounted, the unit occupies four standard height units plus whatever additional space is needed to accommodate cables plugged into the unit at the back.

RACK MOUNT KIT ASSEMBLY

Make sure that you have a Philips screwdriver which is in good condition, and which is the right size. Use the included M3x6mm size screws to secure the rack mount consoles on each side of the Machinedrum. Make sure that all screws are fastened for secure operation of the unit.

CONNECTING THE UNIT

Before you start connecting the Machinedrum to other units, make sure that everything is switched off.

1. Insert the supplied DC adapter into the wall socket, and connect the small plug into the rear of the Machinedrum unit.
2. Connect the main out L/R from the Machinedrum to your mixer or amplifier.
3. If MIDI control is desired, connect MIDI OUT from the Machinedrum to the device that you wish to send data to. Connect the MIDI IN to the device that you wish to receive data from. The MIDI THRU port “echoes” the data arriving at the MIDI IN port, so it can be used for chaining MIDI units together.
4. Switch on all units.

CARE INSTRUCTIONS

To ensure many years of trouble free operation, please follow the advice below:

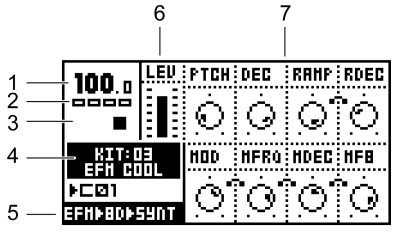
- **Never use any aggressive cleaners on the casing or the LCD overlay. Remove dust, dirt and fingerprints with a soft dry cloth. More persistent dirt can be removed with a slightly damp cloth using only water.**
- **Never use sharp objects near the display to avoid scratches or damage. Also avoid applying any pressure to the display itself.**
- **When transporting the Machinedrum, try to use the box and padding the Machinedrum originally shipped with, or comparable packaging.**
- **Make sure that you place the unit on a stable surface before use. If you mount the unit in a rack, be sure to tighten all four screws in the rack mount holes.**
- **The memory used for storing patches and kits is powered by a battery inside the unit. It will hold data at least 6 years before needing replacement. If the battery**

needs replacement, the “BATTERY LOW” message will appear in the display. Contact Elektron support or your nearest repair center.

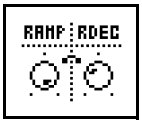
- **Turn off the machine when it is not in use.**

THE LCD USER INTERFACE

The center of Machinedrum editing is the LCD display. The main interface screen is shown below:



1. The current tempo displayed with one decimal.
2. Four boxes showing the playback position in the pattern page.
3. The playback/recording status shown by the standard “record”, “play”, “pause” and “stop” symbols; ●, ▶, ▮▮ and ■.
4. Name and number of the current kit.
5. Specification of the MD-synth, machine and current data entry focus.
6. Level bar showing the overall volume level of the machine on the active track.
7. Up to eight control data entry values. They show what the ***DATA ENTRY*** knobs control and also indicate the current data entry values. When two parameters depend on each other in some way, they will have a small “clip” between them as shown below:



LAYER EDIT AND WINDOWS

When a function which puts a window on top of the main interface screen is opened, the function of certain buttons and/or knobs will change. The buttons that are not used or blocked can still be used to control the layer underneath. For example, when you have called the tempo function it will make use of the ***SOUND SELECTION*** wheel, but you can still use the ***DATA ENTRY*** knobs to control the track in focus. When a window has functions mapped to such interface controls, help is provided at the bottom of the window in the form of icons representing these controls. The icons are:

The arrow buttons — The ***SOUND SELECTION*** wheel

The **[FUNCTION]** key — The **[TRIG]** keys

- **All windows can be closed using the [EXIT/NO] key.**

QUICK START

This quick start will guide you through some of the basic operations to allow you to start using the Machinedrum right away. First connect it as described in section “CONNECTING THE UNIT”, on page 7.

PLAYING AND TWEAKING DRUM SOUNDS

1. Press the **[KIT]** key.
2. Select the LOAD KIT icon in the menu and press **[ENTER/YES]**. You will now be presented with a list where you can select a kit name using the **[UP]** and **[DOWN]** keys.
3. Press **[ENTER/YES]** to load the kit. Exit the menu by pressing **[EXIT/NO]**
4. Now press any of the 16 **[TRIG]** keys to play the corresponding drum assigned to that track. You will notice that the drum select LEDs in the upper left corner will light up accordingly.
5. Turn the ***SOUND SELECTION*** wheel so that the <BD> LED is lit. <BD> is now the “active track”, and every parameter that is being edited will be directed to the bass drum track.
6. Make sure that the <SYNTHESIS> LED is lit by pressing the toggle key **[SYNTHESIS/EFFECTS/ROUTING]**.
7. Now, turn any of the ***DATA ENTRY*** knobs to tweak the corresponding bass drum machine specific parameter. You can trigger the sound by pressing the first **[TRIG]** key while you are turning the ***DATA ENTRY*** knob ***A*** to hear the pitch change.

- **Instead of using the *SOUND SELECTION* wheel to choose the active track you can hold the [FUNCTION] key while pressing the corresponding [TRIG] key.**
- **The *DATA ENTRY* knobs have accelerated editing when pressed. By default, the knobs increase/decrease in steps of +1/-1. When pressed, the step length is higher, allowing quicker adjustments.**

USING THE TRACK EFFECTS

1. Press the **[SYNTHESIS/EFFECTS/ROUTING]** key until the <EFFECTS> LED is lit.
2. You can now edit the track effect parameters for the active track by turning the ***DATA ENTRY*** knobs.

SELECTING AND PLAYING A PATTERN

1. Make sure you have loaded a kit. See the previous section for details on this.
2. Press the **[CLASSIC/EXTENDED]** key until the <CLASSIC> LED is lit. You are now in CLASSIC mode. The difference between CLASSIC and EXTENDED mode is explained in more detail on page 35.
3. Check the **[PATTERN/SONG]** key so that the <PATTERN> LED is lit.
4. Press the **[BANK GROUP]** key to select between banks A to D or E to H. Select pattern bank A to D for this demonstration.

5. To select pattern A01, press and hold the pattern selection key **[A/E]** and then the **[TRIG]** key ***1***. You can see the currently selected pattern in the lower left corner of the display.
6. To play this pattern, simply press the **[PLAY]** key. The pattern will start playing and will loop once it reaches the end. Pressing the **[PLAY]** key while playing pauses the playback. Holding the **[STOP]** key and pressing **[PLAY]** will immediately restart the playback from the beginning. The amount of <SCALE> LEDs lit indicated the number of pages the pattern consists of. For example, if two <SCALE> LEDs are lit, then the pattern consists of two pages.
7. To change pattern during playback, simply select a pattern the same way as in step 4. The display will show the selected pattern beside the current one, but with an arrow pointing towards it. This indicates that once the current pattern has come to its end, the selected pattern will begin to play.
8. To stop the playback of the pattern, press the **[STOP]** key.

- **There might be occasions when the Machinedrum keeps making noise after you press the [STOP] button. This situation can especially occur when using samples with an infinite decay in the Machinedrum UW. In order to force all the tracks to go quiet, quickly press the [STOP] button twice.**
- **The pattern page currently playing is indicated by the flashing of the <PATTERN PAGE> LED.**

RECORDING A PATTERN USING GRID RECORDING

1. You can input notes into a pattern in the sequencer, both while it is playing or while it is currently stopped. Press the **[RECORD]** key to start grid recording. The <RECORD> LED will be lit the whole time during the process.
2. Select the active track using the ***SOUND SELECTION*** wheel.
3. Press the **[TRIG]** keys to insert 16th notes where you wish to have the machine triggered. Pressing the same **[TRIG]** key once more removes the note.
4. To edit other tracks, change the active track using the ***SOUND SELECTION*** wheel.

SETTING THE ACCENT PATTERN

1. Hold **[FUNCTION]** and press key **[B/F]** to access the ACCENT screen.
2. On this screen you can set the accent level for all of the accent trigs. Use the ***SOUND SELECTION*** wheel to set the level.
3. The accent pattern is shown on all <TRIG> LEDs above the **[TRIG]** keys as long as you are in the accent screen. To accent a note, simply select it by pressing the **[TRIG]** key. To remove the accent, press the same key again.

SETTING THE SWING PATTERN

1. Hold **[FUNCTION]** and press key **[C/G]** to access the swing screen.
2. On this screen you can set the amount of swing on notes selected by the swing pattern. Use the ***SOUND SELECTION*** wheel to set the level. A level of approximately 65% should allow you to hear the effect.
3. The swing pattern is shown on all <TRIG> LEDs above the **[TRIG]** keys as long as the swing screen is active. The default swing pattern affects every other note, starting with

the second. The swing pattern can be changed using the **[TRIG]** keys, but for normal rhythm styles the default pattern is better left as it is.

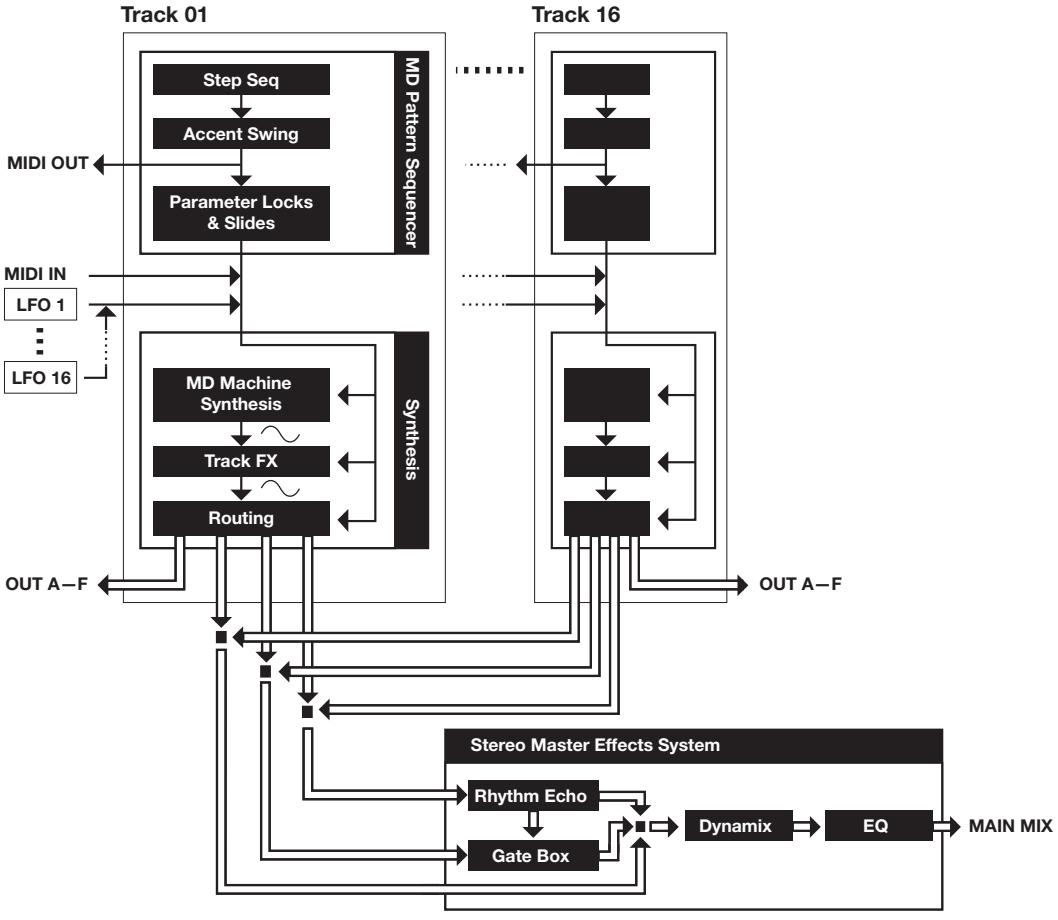
PATTERN LIVE RECORDING

1. The LIVE RECORDING mode of a pattern allows you to play the sounds in the kit while the pattern is playing. To start this mode, hold **[RECORD]** and then press **[PLAY]**.
2. You can now “play” all the machines in the kit directly on the **[TRIG]** keys. All played notes will be quantised to 16th notes, and you will be able to hear them the next time the pattern starts all over.
3. The pattern will loop until you press the **[STOP]** key.

PARAMETER LOCKS

1. Press the **[CLASSIC/EXTENDED]** key until the <EXTENDED> LED is lit. You are now in extended mode. The difference between CLASSSIC and EXTENDED mode will be explained on page 35.
2. Now it is possible to lock parameters to a specific note in the pattern. In GRID RECORDING mode, hold a **[TRIG]** key and then tweak a parameter. The parameter adjusted will be inverted on the LCD screen to indicate that it now is locked to the value you have set. The corresponding <TRIG> LED will flash rapidly to indicate that a parameter is locked for that step.
3. In LIVE RECORDING mode, you can lock parameters by tweaking the knobs while recording.
4. Parameters can be locked for several tracks simultaneously. To lock parameters for a new track, just repeat the sequence from step 2 above.
5. To remove a lock, enter grid edit mode and press the **[TRIG]** key on the locked note twice. This removes the lock and restores the note to be triggered. You can also hold the **[TRIG]** key while clicking the ***DATA ENTRY*** knob corresponding to locked parameter. You will see that the inversion disappears and that the parameter lock is removed.

THE SOUND SYNTHESIS OF THE MACHINEDRUM



The basic sound generating unit in the Machinedrum is called a *machine*. Each machine is designed for generating a specific drum sound such as bass drum, snare or claves. However, this does not mean that you only have to use it for generating the sound indicated by its name. The flexible synthesis and effects system can transform a sound completely, allowing you to come up with unique percussion sounds.

The machines are grouped in MD-synths. You could see it as if the machines in an MD-synth belong to the same family. In the EFM family for example, there are a total of 8 machines for bass drum, snare drum, closed hi-hat etc. Despite the fact that each machine is based on the family synthesis, each machine has a unique synthesis parameter set. The parameters have been carefully selected to give you the best sound shaping possibilities for that particular machine.

The MD-synths and their machines are covered in “Appendix A: MACHINE REFERENCE“.

Each of the 16 tracks can have any machine assigned to it. The assignment of machines and their parameter settings are collected in so called “kits”. Editing the kits is discussed in section “KIT ASSEMBLY”, on page 17.

Every track has its own dedicated effect module, called the TRACK EFFECT system. Each track effect delivers hi/lo/band-pass resonant 24dB filter, amplitude modulation, 1-band eq and sample rate reduction. The settings of effects are saved in the kit as well. The TRACK EFFECT system is explained in section “THE TRACK EFFECTS”, on page 22.

The ROUTING page controls pan, delay send, reverb send, output distortion and volume. The routing options are discussed in section “THE ROUTING PAGE”, on page 25.

The Machinedrum offers 16 assignable Low Frequency Oscillators (LFO’s) that you can connect to any synthesis parameter, track effect or routing parameter. More about the LFO’s can be found in section “LOW FREQUENCY OSCILLATORS (LFO’s)”, on page 32.

The STEREO MASTER EFFECT system containing delay, reverb, EQ and compression add further to the sound shaping possibilities of the Machinedrum. Read more about the “THE STEREO MASTER EFFECT SYSTEM” on page 28.

MACHINEDRUM KITS

Machinedrum kits hold the information specified below:

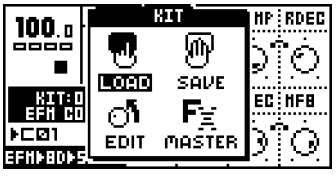
- **The machine selected for each of the 16 tracks**
- **Parameter settings for the 16 machines**
- **Parameter settings for the TRACK EFFECT system**
- **Parameter settings for routings to the STEREO MASTER EFFECT system.**
- **Parameter settings for the STEREO MASTER EFFECT system**
- **The kit name**

All kits are battery backed and user definable. A total of 64 user kits can be stored in memory. When in EXTENDED mode, kits are connected to patterns. Selecting a new pattern will then automatically load the associated kit. In CLASSIC mode, kits and patterns are not linked. Read more about this in the chapter “CLASSIC VS EXTENDED” on page 35.

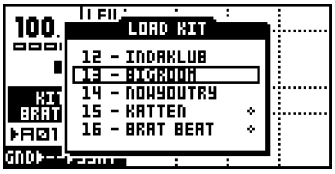
- **You can either assemble a kit from scratch or modify an existing one and then save it to a new position. Building your kit from an existing one is often quicker.**

LOADING A KIT

1. Open the KIT window by pressing the **[KIT]** key



2. Use the arrow keys to move to the LOAD icon. Press **[ENTER/YES]** to open the LOAD KIT menu.



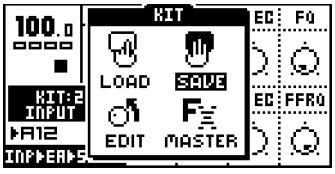
3. The screen presents a list of the kits stored in memory. Use the **[UP]** and **[DOWN]** keys to choose among the 64 kit slots. Press **[ENTER/YES]** to load the kit of your choice.

If you want to exit without loading a kit, press **[EXIT/NO]**.

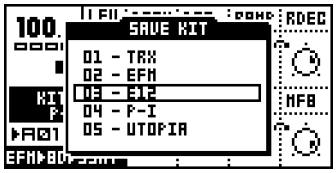
- **Kits that are not associated with any pattern are distinguished by a little star after the kit name.**

SAVING AND NAMING A KIT

1. Open the KIT window by pressing the **[KIT]** key.



2. Use the arrow keys to move to the SAVE icon. Press **[ENTER/YES]** to open the SAVE KIT menu.

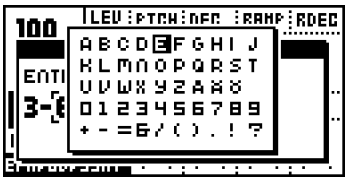


3. The screen presents a list of the kits stored in memory. Use the **[UP]** and **[DOWN]** keys to choose among the 64 kit slots. Press **[ENTER/YES]** to select the slot where you want to save your kit.

4. The window opening will allow you to name the kit:

Use the ***SOUND SELECTION*** wheel or the **[UP]** and **[DOWN]** keys to cycle through the letters. The **[LEFT]** and **[RIGHT]** keys move the cursor backwards and forwards on the line.

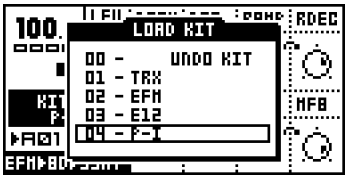
5. Pressing the **[FUNCTION]** key gives access to the “high score” selection method, in which you see all characters at the same time. Keep the **[FUNCTION]** key held while navigating using the **[LEFT]**, **[RIGHT]**, **[UP]** and **[DOWN]** buttons. Release the **[FUNCTION]** key when you have found the right letter.



6. When the kit naming procedure is completed, press **[ENTER/YES]** to save it.
7. If you want to exit without saving the kit, press **[EXIT/NO]**.

UNDO KIT

There is a special kit in the first position of the kit list called the “UNDO KIT”.



When you have made unsaved changes to a kit and a new one is loaded, the unsaved old kit will be stored in the UNDO KIT position. When saving a kit over an occupied position in the kit list, the overwritten kit will also be saved in the UNDO KIT.

You can load the UNDO KIT to restore your most recent unintentionally lost kit. This can often be useful in EXTENDED mode, where a pattern change automatically can change kits. When you have needed to restore your kit using the UNDO kit, don’t forget to save it.

COPY KIT

When in the SAVE KIT or LOAD KIT menus you can copy and paste kits.

When you are in either the SAVE KIT or LOAD KIT menus, select the kit you want to copy, hold down the **[FUNCTION]** key and press the **[RECORD]** button. A message saying “COPY KIT” appears.

8. Use the **[UP]** and **[DOWN]** keys to scroll to the slot you want to copy the kit to.

9. To paste the kit into the slot, hold **[FUNCTION]** and press the **[STOP]** button. The message “PASTE KIT” appears.

- **If you want to undo the action, press the [FUNCTION] + [STOP] buttons again. The message saying “UNDO KIT” indicates that the paste operation has been undone.**

CLEAR KIT

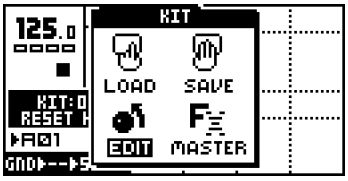
You can also clear kits while in the SAVE or LOAD KIT menus.

1. Select the kit you want to clear, hold down the **[FUNCTION]** key and press the **[PLAY]** button. A message saying “CLEAR KIT” appears.

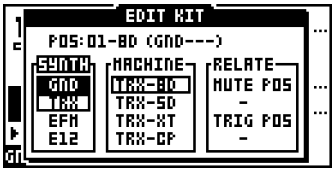
- **It is also possible to undo this operation. To undo the action, hold the function [FUNCTION] button and press the [PLAY] button. The message saying “UNDO KIT” indicates that the clear operation has been undone.**

KIT ASSEMBLY

To assemble a kit, you need to select and assign your machines for each track. First open the KIT window by pressing the **[KIT]** key.



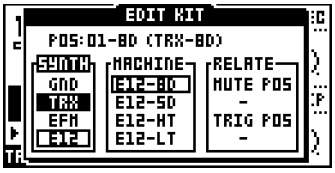
1. Use the arrow keys to move to the EDIT icon. Press **[ENTER/YES]** to open the edit window.



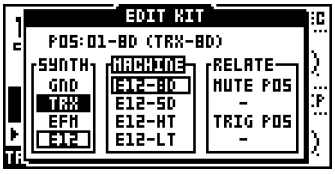
2. The EDIT KIT menu is used for both selecting which machine to load to a track and for specifying mute and trig groups. The <SOUND SELECTION> LEDs indicate which track you are editing, also shown at the top of the EDIT KIT window. To change track position, turn the ***SOUND SELECTION*** wheel left or right, or hold down the **[FUNCTION]** key and press the corresponding **[TRIG]** key.

3. After choosing what track you want to change, use **[LEFT]** and **[RIGHT]** to choose between the SYNTH, MACHINE and RELATE columns. **[LEFT]** and **[RIGHT]** are also used for selecting MUTE/TRIG POS focus in the RELATE column. Once you have entered a column, it will be highlighted and now you can use **[UP]** and **[DOWN]** to choose from the available options.

   Select the MD-synth by first selecting the SYNTH column with the **[LEFT]** and **[RIGHT]** keys. Then move the focus using **[UP]** and **[DOWN]** to select the MD-synth of your choice.



4. When you are satisfied with your choice, press **[RIGHT]** once to move the focus to the MACHINE column. Select the machine using **[UP]** and **[DOWN]**.



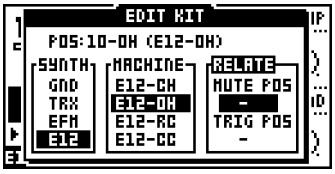
5. Finally you need to press the **[ENTER/YES]** key to confirm your selection. This will load the machine with every value set to default.

- **If you want to load a machine and keep the previous settings of the TRACK EFFECT and ROUTING pages, hold [FUNCTION] while pressing the [ENTER/YES] key.**
- **You can preview sounds without loading them. While in the EDIT KIT menu, make sure that the <RECORD> LED is not lit and that the focus is on the MACHINE column. Then press the [TRIG] key corresponding to the active track. You will now hear the default sound of the chosen machine.**
- **The MD-synth and the machine currently selected are shown as inverted text. The focus, when moved away from the original selection, is a square window. Once [ENTER/YES] is pressed, the current focus will be selected, thus changing the focus to inverted text.**

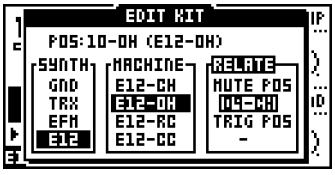
SETTING MUTE AND TRIG RELATIONS OF A KIT

Mute groups are useful for interleaving drums such as open and closed hi-hats. Trig groups can be used for making layered drums, consisting of two drums on different tracks that are triggered by one drum trig only.

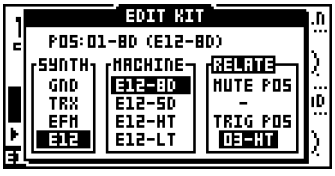
1. In the EDIT KIT menu, move the focus using the **[LEFT]** and **[RIGHT]** keys to the RELATE column. **[LEFT]** and **[RIGHT]** are also used for selecting the MUTE/TRIG POS focus.



2. The mute relation is used for interleaving drums, such as open and closed hi-hats which are supposed to stop the sound of each other when played. Use the **[UP]** and **[DOWN]** keys to select which track is muted when the current machine is triggered.



3. The trigger relation is used for layering sounds. It can either be used to make a sound richer or to combine two entirely different machines to make a new type of percussion. Use **[LEFT]** and **[RIGHT]** to move to the TRIG POS position. Use the **[UP]** and **[DOWN]** keys to select which track will be played in addition to the current when it is trigged. Confirm the selection by pressing the **[ENTER/YES]** key



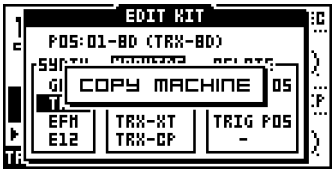
- **You can not use TRIG relations in a chain. If the bass drum is set to trigger the snare, and the snare is set to trigger the cymbal, only the bassdrum and snare will be played when the bass drum is triggered.**

- **Layering is a very powerful way to expand the sound palette of the Machinedrum. Try using filtering to obtain the low frequency characteristics from one sound and combine it with the higher frequencies from another. This is especially useful when creating new and interesting bass drum sounds.**

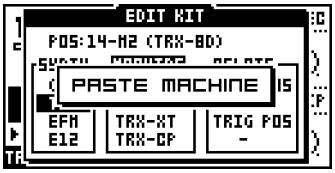
COPY MACHINE

You can copy one machine and its settings from one track to another. It is also possible to copy the current machine and its settings to another kit.

1. In the edit kit menu, press and hold **[FUNCTION]** and then press **[RECORD]**. A message saying “COPY MACHINE” appears.



2. The settings are placed in the machine copy buffer. Now you can either change track using the ***SOUND SELECTION*** wheel, or load a new kit and select a target track in there.
3. Once the target track is selected, press and hold **[FUNCTION]** and then press **[STOP]** to paste the machine settings from the copy buffer. A message saying “PASTE MACHINE” appears.



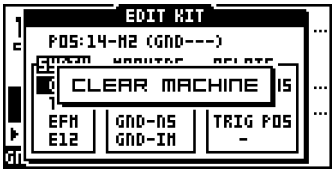
- **Any previous machine settings will be overwritten when pasting.**

- **Once the machine is copied into the copy buffer, it can be pasted many times to several tracks or kits. It will stay in the buffer until it is replaced by a new one.**
- **The UNDO command is available for this operation. Press the [FUNCTION] + [STOP] once more to undo the paste operation.**

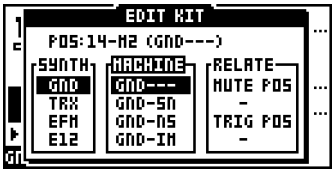
CLEAR MACHINE

It is possible to clear a track, so no machine is connected to it.

1. In the EDIT KIT menu, press and hold **[FUNCTION]** and then **[PLAY]** to clear the machine. A message saying “CLEAR MACHINE appears.



2. A track that you have used the clear machine function on will be displayed like this:

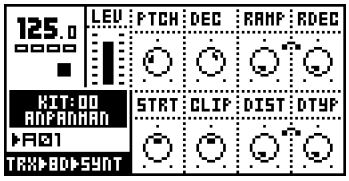


- **The clear machine operation can be undone by performing the operation one more time. The message “UNDO MACHINE” will be shown in the display.**

MACHINE PARAMETER EDITING

Machines are controlled by up to eight synthesis parameters that are accessed with the ***DATA ENTRY*** knobs.

Press the **[SYNTHESIS/EFFECTS/ROUTING]** key until the <SYNTHESIS> LED is lit. The rightmost text of the machine information area at the bottom left will show “SYNT” for synthesis. The machine parameters are now controlled by the ***DATA ENTRY*** knobs.



- **Changes are not stored to the kit unless it is saved. Please see section “SAVING AND NAMING A KIT”, on page 15 for information about saving kits.**

For more information on specific parameters of the different machines, please see “Appendix A: MACHINE REFERENCE“.

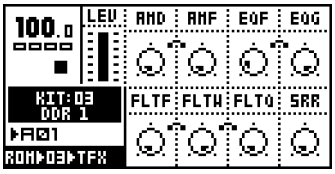
THE TRACK EFFECTS

The TRACK EFFECT system is available for all 16 tracks as an extension to the machine percussion synthesis. The track effects consist of individual effects for every track.

The effects that are available for each track are:

- **Amplitude modulator**
- **1-band parametric EQ**
- **Adjustable lo/hi/bandpass Filter**
- **Sample rate reduction**

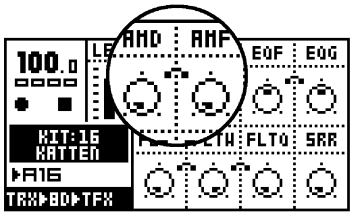
To access the track effects, press the **[SYNTHESIS/EFFECTS/ROUTING]** key until the <EFFECTS> LED is lit. The rightmost text of the machine information area at the bottom left will show “TFX” for effects. The TRACK EFFECT parameters for the active track are now controlled by the ***DATA ENTRY*** knobs.



- **The TRACK EFFECT system is a very powerful sound shaping tool. Use it to either dramatically alter or subtly change the sound of a machine.**

AMPLITUDE MODULATOR

The amplitude modulator is essentially a volume control which is controlled by a low frequency oscillator. It is also known as a tremolo. The frequency of the Machinedrum amplitude modulator can be very high, allowing extreme effects.

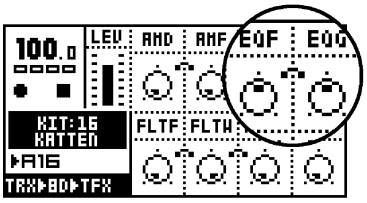


AMD controls the the modulation depth.

AMF controls the modulation frequency.

TRACK EQ

Using the 1-band parametric EQ, you can boost or reduce a certain frequency band.



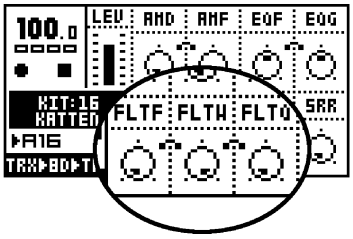
EQF controls which center frequency that will be affected by the EQ gain.

EQG controls the EQ gain. If set to a negative value, the volume of the frequency centered around the **EQF** parameter will be reduced.

- **If you find a bass drum lacking in punch, try adding a little EQ-gain in the lower frequencies.**

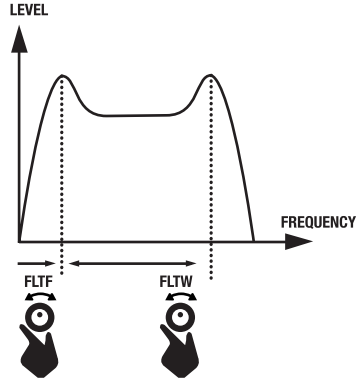
FILTER

The TRACK EFFECT system offers a resonant 24dB lo/hi/band-pass filter. The parameters are untraditional, giving the user control of both the low and high filter cutoffs, as well as a variable gap bandpass filter.



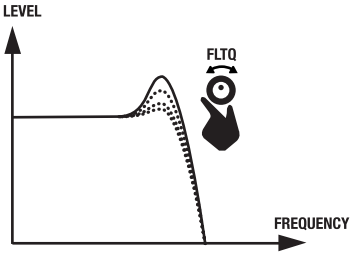
FLTF controls the base filter cutoff frequency. When the **FLTW** parameter is set to its highest value, changing the **FLTF** parameter has the function of a high-pass filter. When the **FLTF** parameter is set to zero, the highpass-Q is disabled.

The illustration below shows the function of the filter.



FLTW controls the filter gap width, that is the distance between the highpass and lowpass cutoff frequencies. When the **FLTF** is set to its minimum value, changing the **FLTW** param-

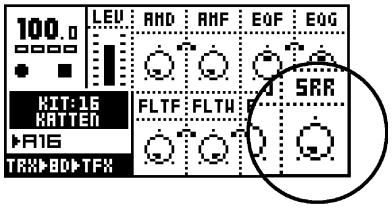
eter has the function of a low-pass filter. When the **FLTW** parameter is set to its maximum, the lowpass-Q is disabled.



FLTQ controls the filter quality Q parameter. The Q value controls how much the volume is boosted around the low pass and high pass filter cut off frequencies.

THE SAMPLE RATE REDUCER

The sample rate reduction reduces the sample rate using sample and hold.

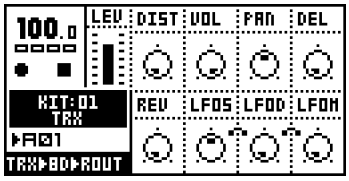


SRR controls the amount of sample rate reduction.

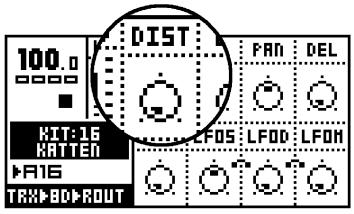
THE ROUTING PAGE

The ROUTING page controls routing of the sound through the distortion, volume and pan, to the effect buses and also basic LFO control.

To access the ROUTING page, press the **[SYNTHESIS/EFFECTS/ROUTING]** key until the <ROUTING> LED is lit. The rightmost text of the machine information area at the bottom left will show “ROUT” for routing. The routing parameters for the active track are now controlled by the ***DATA ENTRY*** knobs.

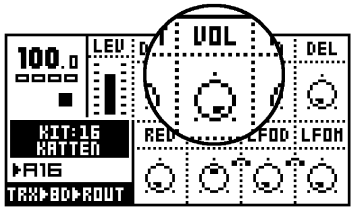


DISTORTION
The distortion is applied after the TRACK EFFECTS but before volume and pan.



The **DIST** parameter controls the signal overload distortion.

VOLUME
This volume control is separate from the **LEV** overall gain control. You can control track volume by parameter locks or by using the LFO system. The ACCENT feature can also be used to affect volume of a track.



VOL controls the volume of the track

See section “LOW FREQUENCY OSCILLATORS (LFO’s)”, on page 32 for more information on LFO’s.

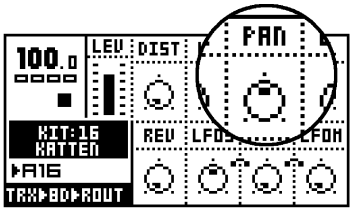
See section “PARAMETER LOCKS”, on page 12 for more information on parameter locks.

See section “ACCENT TRACK”, on page 45 for more information on the accent feature.

- **The LEVEL overall gain control can not be locked or controlled by an LFO. Instead, use the VOL parameter.**

PAN

Here you control the stereo pan for the main stereo outputs. The default value is 0, which places a sound in the center. When a track is assigned to an individual output, the PAN parameter has no effect.

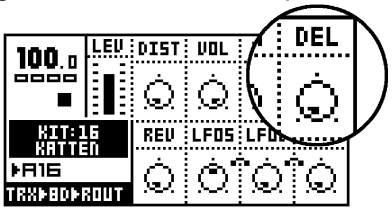


PAN positions the sound in the stereo field. A value of -64 will pan the sound hard left, a value of +63 will pan the sound hard right.

- **To get a more spacious sound, try to spread out the tracks in the stereo field using the PAN parameter. Note though that the normal placement of the bass drum is almost always in the center.**

DELAY SEND

This is a send to the RHYTHM ECHO DELAY of the STEREO MASTER EFFECT system. When a track is assigned to an individual output, no delay will be applied to the sound.

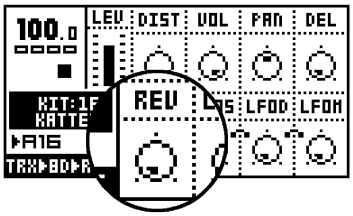


DEL controls the amount of signal that will be sent to the RHYTHM ECHO delay.

See page 29 for more information on the RHYTHM ECHO delay.

REVERB SEND

This is a send to the GATE BOX reverb of the STEREO MASTER EFFECT system. When a track is assigned to an individual output, no reverb will be applied to the sound.

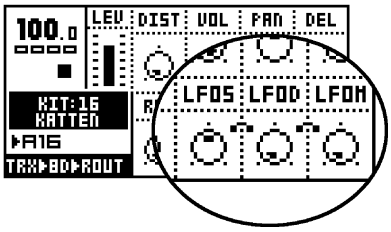


REV controls how much signal will be sent to the Machinedrum GATE BOX reverb.

See page 30 for more information on the GATE BOX Reverb.

LFO CONTROL

These parameters are identical to those found in the LFO menu.



LFOS controls the speed of the LFO

LFOD controls the modulation depth of the LFO

LFOM controls the mix between the two selectable LFO waveforms.

See section “LOW FREQUENCY OSCILLATORS (LFO’s)”, on page 32 for more information about the LFO’s.

THE STEREO MASTER EFFECT SYSTEM

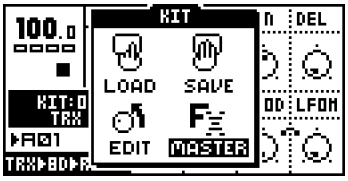
The STEREO MASTER EFFECT system includes the RHYTHM ECHO delay, the GATE BOX reverb, the MASTER EQ equalizer and the DYNAMIX dynamic processor (compressor).

The MASTER EQ and DYNAMIX processor effect the final stereo main out signal. The RHYTHM ECHO and GATE BOX reverb can be fed signals from each of the 16 tracks using the delay and reverb send parameters All master effect settings are saved as a part of the kit. The MASTER EFFECTS is only available on the main outputs. You can't use them on the individual outputs.

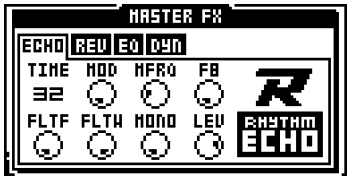
- **Even though you can't parameter lock the master effects, you can still control them using CTRL-machines. For more info about this, please see "Appendix A: MACHINE REFERENCE"**.

To access the STEREO MASTER EFFECT menu, follow the steps below.

1. Press the **[KIT]** key to open the kit menu.



2. Move to the MASTER FX icon, and press **[ENTER/YES]** to open the master effect menu.

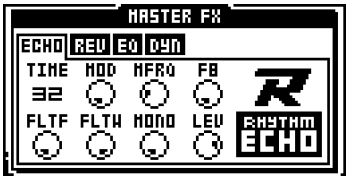


3. Use the **[LEFT]** and **[RIGHT]** arrow keys to select the effect you wish to edit.

- **Since the master effect settings are stored in the kit, it is important to save the kit if you wish to keep the changes.**

THE RHYTHM ECHO DELAY

The RHYTHM ECHO delay is a multi-functional single tap delay with realtime adjustable delay time. Some of its functionality can resemble tape loops and solid state CCD delays. The delay time is synced to the tempo setting.



TIME controls the actual delay time. It is relative to the current tempo, and it is measured in 128th notes. For instance, for a two beat delay (8 16th notes) **TIME** should be set to 64.

MOD controls the delay time modulation depth.

MFRQ controls the delay time modulation frequency.

FB controls the delay feedback amount. The feedback is taken after the filter but before the out gain control. **FB** set to central position with filter totally open gives unity feedback.

FILTF is the filter base frequency parameter. Please refer to section “FILTER”, on page 23 for a description of the functionality of the filter.

FILTW is the filter width parameter. Please refer to section “FILTER”, on page 23 for description of the function.

MONO is the feedback panning control parameter. A low value gives ping pong style delay, a high value preserves the stereo information, and a central position brings the delay feedback into the central panning position.

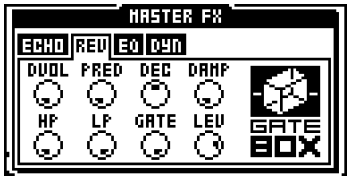
LEV is the out gain level control of the RHYTHM ECHO delay.

- **Watch out if you are using FB levels greater than 63. The sound level of the delayed signal will then constantly increase.**

- **To get a robotic effect on your drum sounds, turn up the delay send parameter (DEL) for all sounds, set TIME to 1 and turn up FB to 55.**
- **You can use the RHYTHM ECHO delay to obtain pseudo stereo effects. Turn up the DEL send of the sound you want to affect and in the RHYTHM ECHO delay menu, turn TIME to 1, FB to zero and the MONO parameters to zero. Then set the PAN parameter of the sound to either hard left or hard right.**

THE GATE BOX REVERB

The GATE BOX reverb brings HiQ reverb tailored for percussion, with gating possibilities for extra effects.



DVOL is the delay to reverb level parameter. This parameter allows the output of the RHYTHM ECHO to be routed into the GATE BOX reverb.

PRED is the pre-delay parameter. The direct and delay signal mix is delayed by an amount of time to give the impression of the reverbation arriving after the sound.

DEC is the decay time parameter. Decay time is the time it takes for the reverbation to die out after a sound has ended. The decay parameter has a span of 0.5 to 3 seconds.

DAMP is the damping control parameter. Damping decreases the high frequencies to give the impression of soft walls.

HP is a high-pass filter, filtering the output from the reverb.

LP is a low-pass filter, filtering the output from the reverb.

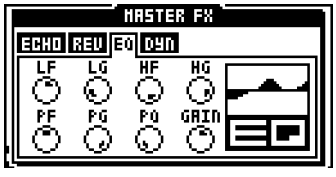
GATE sets the gate time. The reverbated signal is gated after this time, if the signal level is low. The maximal value for this parameter gives infinite time - in other words, the gate is off.

LEV is the output level parameter of the GATE BOX reberb.

- **Sometimes a small amount of gated reverb can be used on snare drums to make them more distinct. If you are looking for the sound popular in the 1980's, apply a fairly large amount of gated reverb to the drum sounds.**

MASTER EQ

The MASTER EQ equalizer is the final frequency shaping tool. It supplies one low shelf and one high shelf filter that allow you to boost or reduce the high and low frequencies. It also brings one parametric equalizer with frequency and Q-control.



LF is the cut/boost frequency parameter of the low shelf filter.

LG is the low shelf gain parameter that controls how much the low frequencies should be boosted / reduced between -15dB and +15dB.

HF is the cut/boost frequency parameter of the high shelf filter.

HG is the high shelf gain parameter that controls how much the high frequencies should be boosted / reduced between -15dB and +15dB.

PF is the parametric EQ frequency parameter, that is the center frequency of the parametric EQ band.

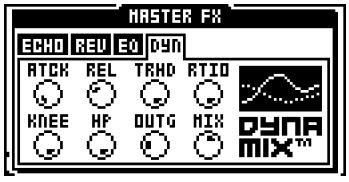
PG is the parametric EQ gain parameter. It controls how much the parametric EQ should boost or reduce between -15dB and +15dB, at the frequency set by the “PF” parameter.

PQ is the parametric EQ Q factor. The Q controls the width of the band that is boosted or reduced by the parametric EQ. High Q-values give a narrow band.

GAIN is the final out volume control. This parameter allows you to adjust the out volume of the main stereo out.

THE DYNAMIX DYNAMICS PROCESSOR

The DYNAMIX dynamics processor is specially designed for compressing percussive sounds.



ATCK controls the attack time, which is the time it takes the volume detector to react to the Attack part of the sound signal. Long attack times let fast transients through the compressor.

REL controls the release time. This is the time it takes the volume detector to react to the Release part of the sound signal. A long release time lifts the signal level as a sound decays, flattening the dynamics.

TRHD sets the threshold level where the signal starts getting compressed (from -48 to 0dB).

RTIO controls the ratio by which the signal is compressed, when the threshold level is reached. The ratio has a value in the range 1:1 to 1:256.

KNEE controls the soft knee transition. It makes the transition between compressed and uncompressed signal smoother, by softening the knee. A low value gives a hard knee.

HP is the side chain High pass filter. This parameter highpass filters the sidechain signal of the Compressor, so that it does not react to bass.

OUTG out gain raises the signal level. This is used to make up for the gain lost in the compressor.

MIX controls the cross mix between the compressed signal and the original signal. A high value bypasses the DYNAMIX processor.

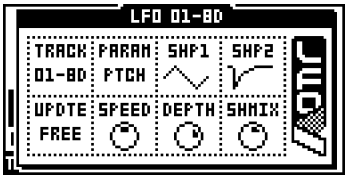
LOW FREQUENCY OSCILLATORS (LFO's)

Each kit in the Machinedrum has 16 assignable low frequency oscillators (LFO), which can be used to modulate track parameters. The speed of the LFO is synchronized to the global tempo.

Each of the 16 LFO's offers two synchronized waveforms. A mix control allows the output to be set to any mix between the two waveforms. LFO EDIT

To edit an LFO, follow the steps described below.

Press **[FUNCTION]** and hold it, then press **[SYNTHESIS/EFFECTS/ROUTING]** to open the LFO edit window. Use the ***SOUND SELECTION*** wheel to select the LFO to edit.



TRACK displays the target track for the chosen LFO. The LFO's are by default mapped to control their own tracks, but they can be set to modulate any track, including other LFO's for extra complex modulation waveforms.

PARAM selects the parameter you wish the LFO to modulate. All SYNTHESIS, TRACK EFFECTS and ROUTING parameters are accessible by the LFO. You can modulate another LFO by targeting the track it is assigned to, and select either its **SPEED**, **DEPTH** or **SHMIX** parameters with the **PARAM** control.

SHP1 selects which waveform shape that can be used by the LFO. There are six types of available LFO waveforms:

- **Triangle**
- **Saw**
- **Square**
- **Linear decay**
- **Exponential decay**
- **Random**

SHP2 offers inverted waveforms of the ones available in **SHP1**.

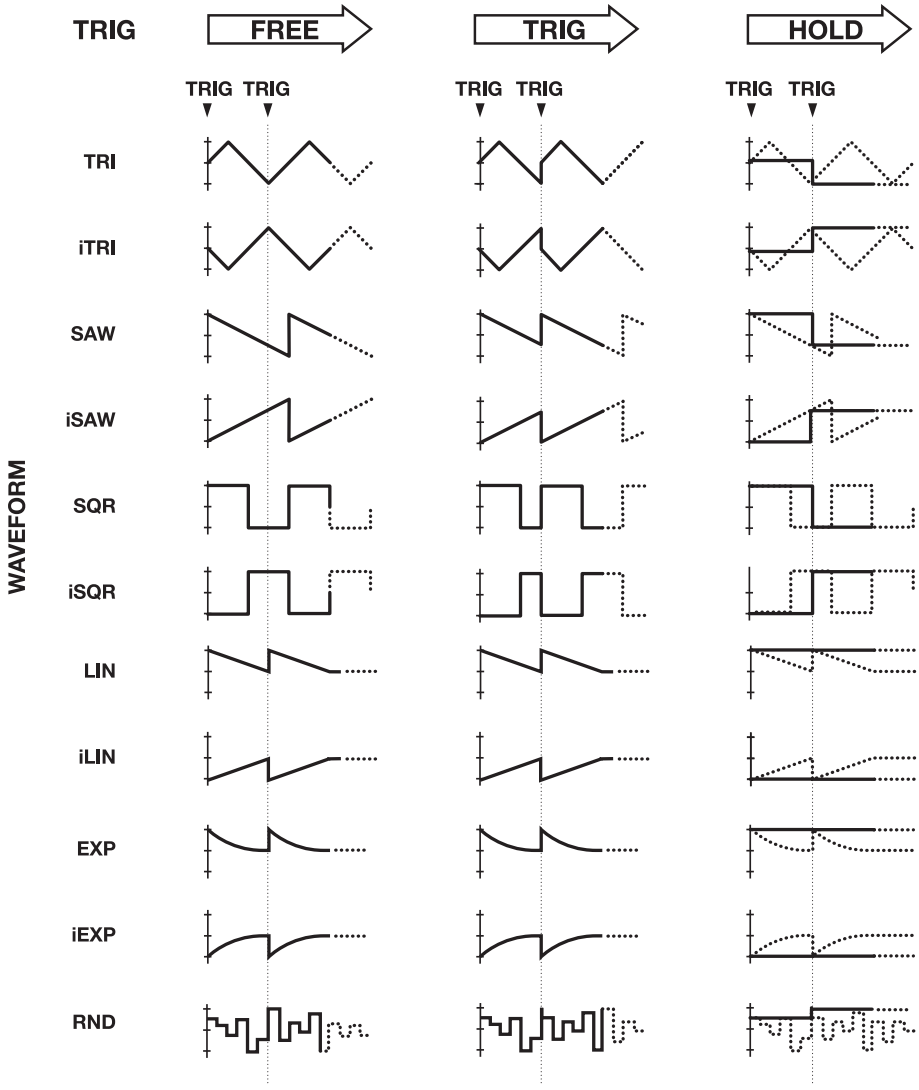
UPDTE controls the behaviour of the LFO. If the **UPDTE** parameter is set to "FREE", the LFO will never retrig. It will then continue to run regardless if new notes are trigged. If **UPDTE** is set to "TRIG" the LFO is re-started each time the track is triggered. "HOLD" is a sample and hold function, which freezes the value of the waveform at the time when the track is triggered. It will remain frozen until trigged again. Note that LFO's are only ever restarted by trigging the corresponding track.

SPEED sets the update speed relative to the tempo in 1/128 note steps.

DEPTH controls how much the LFO will affect the sound.

SHMIX is a balance control. When set to zero the LFO only uses the **SHP1** waveform as modulation. At its maximum, only modulation by the **SHP2** waveform is used.

Below is an illustration showing the behaviour of the waveforms of the LFO's when set to the different **UPDTE** options.



- **As the LFO settings are stored in the kit, it is important to save the kit if you wish to keep the changes.**

- **The SPEED, DEPTH and SHMIX parameters are also available from the ROUTING page. As the parameters of the ROUTING page can be controlled by parameter locks and even by other LFO's, this can be a source for highly advanced LFO set-ups.**

- **If you select the same destination for two different LFO tracks their outputs will be added, making advanced layered LFO's possible.**
- **You can let a number LFO's control several parameters of a machine. This allows for percussion sounds that are constantly changing.**
- **Note that an LFO can modulate another LFO's parameters as well, as long as the modulated LFO is on a higher track. The LFO 03 can modulate the parameters of the LFO 04, but not vice versa.**
- **Copy, paste, clear and undo functions are available for the LFO's.**

THE PATTERN SEQUENCER

The sequencer is a central part of the Machinedrum. It is designed to be an inspirational tool for pattern based rhythms.

The sequencer is designed both for live and studio use. The patterns can either be trigged individually from the user interface, trigged by MIDI commands or they can be linked together to form a song.

The sequencer has two main modes of operation, called PATTERN mode and SONG mode. We will start by taking a look at the PATTERN mode and move on to the SONG mode, but first we will take a look at a very central concept of the Machinedrum.

CLASSIC VS EXTENDED

The sequencer is tied to parameter control and kit selection in different ways, depending on the editing mode currently selected.

The key **[CLASSIC/EXTENDED]** switches between the CLASSIC and the EXTENDED mode, and the adjacent LED indicates which mode is currently active.

CLASSIC EDITING

In CLASSIC mode, the Machinedrum will behave much like a traditional drum machine. In this mode, patterns simply keep trig information and have no associated kits or parameter locks. Changing patterns will not recall any kit.

EXTENDED EDITING

In EXTENDED mode, each pattern is associated with a certain kit, which will be recalled when the pattern is played. This way, you know playing a certain pattern always gives the same result. In this mode, patterns also keep parameter lock data. See section “PARAMETER LOCKS”, on page 47 for more information about parameter locks. Working with parameter locks in EXTENDED mode is the key to many unique Machinedrum possibilities.

- **In EXTENDED mode, be careful to save any changes you have made to your kit that you want to keep. Changing a pattern might change kit and then you will lose the old kit settings.**
- **In EXTENDED mode, if two patterns use the same kit, the kit will not be reloaded when changing pattern.**

TEMPO

THE TEMPO SCREEN

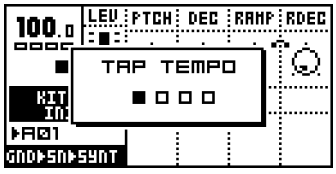
The TEMPO screen is opened by pressing the **[TEMPO]** key.

Now you can use the ***SOUND SELECTION*** wheel to change the current tempo in integer steps. The **[UP]** and **[DOWN]** arrow keys change the decimal part of the tempo. Holding **[FUNCTION]** while editing the tempo will delay the actual change of tempo until you release the key.

- **You can temporarily shift the tempo up or down by 10% by pressing the [LEFT] or [RIGHT] arrow keys. This is very handy when manually syncing your Machinedrum to a turntable. Note that you do not need to be in the tempo screen to perform this tempo shift.**

TAP TEMPO

To tap a tempo, hold the **[FUNCTION]** key and tap the **[TEMPO]** key at a steady rhythm.



After four consecutive taps the average tempo of the taps will be set as the new tempo and it will be showed in the TAP TEMPO window. You can continue tapping the **[TEMPO]** key, the tapped tempo average will continue updating.

EXTERNAL SYNCHRONIZATION

The Machinedrum can be set to either internal or external synchronization.

When in internal clock mode the Machinedrum outputs a high quality MIDI clock on the MIDI OUT port. This can be used for keeping external gear in sync with the Machinedrum.

When in external midi clock synchronization mode the Machinedrum will stay in sync with an external MIDI clock if present. When in external clock mode the tempo in the upper left corner of the base LCD screen will show “EXT” for external synchronization. The tempo screen will show the current average tempo. For more information about this, see section “SYNC”, on page 80.

- **The tempo is not stored in a pattern or a kit. However, songs can store tempo changes.**

PATTERN MODE

To edit a pattern, first make sure that the <PATTERN> LED is lit by toggling the **[PATTERN/SONG]** key. Then select a pattern as described below. Load a kit that you want to use. Then edit the pattern, either by using GRID RECORDING or LIVE RECORDING.

PATTERN SELECTION

The Machinedrum has 8 banks of 16 patterns each. The banks are named A,B,C,D,E,F,G,H. The **[BANK]** key selects between pattern banks A to D and E to H.

To select a pattern, press and hold the bank name key while pressing the **[TRIG]** key. For selecting pattern A05, first make sure the <BANK> LEDs indicate that banks A to D are selected, then press and hold key **[A/E]** while pressing the fifth **[TRIG]** key.

While the **[BANK]** keys are pressed you can tell which patterns are uninitialised by the 16 <TRIG> LEDs. LEDs that are lit indicate that the corresponding pattern contains data. You will also see which pattern that is currently selected. The <TRIG> LED corresponding to the active pattern will give off a rapid double blink.

The **[BANK]** keys are “sticky”, which means that if you let them go without pressing any **[TRIG]** key you still have around two seconds for selecting your pattern. This simplifies one hand operation of the Machinedrum. A message on screen will indicate that the **[BANK]** key still is active and a graphic represantation will tell how much time is left for selecting your pattern.

If pattern selection is done while the sequencer is playing, the selected pattern will not be actived until the current pattern has played to its end. You will see the change in the display as described in section “THE LCD USER INTERFACE”, on page 9.

PATTERN CHAINING

You can use pattern chaining to cue up patterns to be played after each other in a loop, like a simple live sequencer for patterns. In PATTERN mode, hold a **[BANK]** button and then press the **[TRIG]** keys corresponding to the patterns you want to chain. The patterns will be chained in the order you select them. It is only possible to chain patterns from one bank, and each pattern may only be chained once. Chaining is indicated by a double arrow between the current and the next pattern.

[STOP] changes pattern if a pattern was previously selected as next pattern. That means that if pattern A01 is started and A02 is cued to play after pattern A01, pressing **[STOP]** and then **[PLAY]** will start playing at A02.

PARAMETER TWEAKING

By pressing the **[FUNCTION]** key and turning one of the ***DATA ENTRY*** knobs, the actual parameter will be changed for every track. This is a quick way to make patterns sound dramatically different. Note that the values of the manipulated parameters may not be restored when you turn them back the same amount of steps you first changed them. If track 1 has a **FLTW** setting of 0 and track 2 has a **FLTW** setting of 127 and you change the **FLTW** parameter 10 steps clockwise using [**FUNCTION]** + ***DATA ENTRY*** knob, track 1 will display a **FLTW** value of 10 while track 2 still will have a value of 127.

- **[FUNCTION] + *DATA ENTRY* knob will not affect UW RAM Recording Machines or MIDI machines. However, if the active track contains a MIDI machine, [FUNCTION] + a *DATA ENTRY* knob will only affect other tracks containing MIDI machines. The**

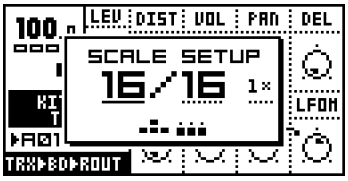
same condition applies if the active track is a UW RAM Recording machine. Note that CTRL machines are not affected by this function as active track or otherwise.

- **When in the TRACK EFFECTS section, use [FUNCTION] + *DATA ENTRY* knob E or F to apply a filter sweep to the whole pattern.**
- **By pressing [FUNCTION] + [CLASSIC/EXTENDED] the saved kit will reload instantly. This comes in handy when a pattern has been heavily manipulated and you want to quickly revert it back to its original settings.**

SCALE SETUP

It is possible to change the length and step resolution of a pattern. By default a pattern is 4/4 bars (16 steps) of length.

By pressing the **[FUNCTION]** key and then the **[SCALE SETUP]** key, you can set the scale length and replay speed mode.



There are three values that can be changed in the SCALE SETUP screen. The focus is moved with the **[LEFT]** and **[RIGHT]** keys.

The leftmost number selects the number of steps in the pattern. The maximum number of steps is determined by the total length. Use [UP] and [DOWN] to increase/decrease the number of steps. The [TRIG] keys can also be used to set the end step.

The second value selects the total length of the scale. This is either 16, 32, 48 or 64 steps. If you use 17 steps or more in a pattern, the [SCALE SETUP] key is used in GRID RECORDING mode to toggle the focus between the different pattern pages.

The third parameter is the tempo multiplier. There are four possible settings, “1X”, “2X”, “3/4X” and “3/2X”. 2X allows a pattern to be played back at twice the global tempo. 3/4X allows a pattern to be played back at three quarters of the global tempo. 3/2X will play back a pattern twice as fast as the 3/4X setting. Double speed is useful for increasing the step resolution to 32th notes. Three quarter-speed is useful when the Machinedrum is playing alongside other instruments set to the same BPM and you want the Machinedrum to play triplets.

- **Even though you set a pattern to have a certain length using scale setup, you can change this row by row in the song editor. See section “SONG MODE”, on page 51 for more information.**
- **When changing pattern length from 16 to 64 steps, the first 16-step pattern page will be copied to all the subsequent pages, if the last other pages previously have not been programmed.**

COMPOSING A PATTERN

GRID RECORDING

GRID RECORDING is a method of percussion composing that was first developed in vintage drum machines. In its default state, the 16 **[TRIG]** keys represent 1 bar of 16th notes.

1. To start recording, press the **[RECORD]** key. The <RECORD> LED on the left side of the key is now firmly lit.
2. Select the track you wish to edit using the ***SOUND SELECTION*** wheel.
3. You can press **[PLAY]** if you would like to have the pattern playing during composing. The LEDs above the **[TRIG]** keys will start to run to indicate the current step in the pattern. It will loop over and over, until you press **[STOP]** to stop the playback or **[PLAY]** to pause it. The pattern page being played is indicated by the flashing of the corresponding <PATTERN PAGE> LED.
4. Press the **[TRIG]** keys to toggle percussion trigging for the corresponding step. The LEDs above the **[TRIG]** keys will indicate what steps will be triggered.
5. If the pattern contains more than 16 steps, switch to the pattern page you want to edit by pressing the **[SCALE SETUP]** key. The active pattern page is being indicated by a firmly lit <PATTERN PAGE> LED.

- **In the Machinedrum, you work directly in the pattern memory. There is no need to save patterns. If you wish to keep the data in a pattern, you will have to copy it to another pattern before you begin editing it. See section “PATTERN COPY”, on page 43 for more information on copying pattern data.**
- **If you exit the recording mode, you will not get the running LEDs above the [TRIG] keys during playback.**

- **The copy, clear, paste and undo functions operate on a specific track when in GRID RECORDING mode. See section “TRACK COPY” on page 41.**
- **The copy, clear, paste and undo functions operate on the full pattern when not in GRID RECORDING mode. See section “PATTERN COPY” on page 43.**
- **An easy way to experiment with a pattern is to move all the trigged notes of a track forwards or backwards. While in record mode, hold down [FUNCTION] while pressing the [LEFT] or [RIGHT] arrow keys to perform this move. This is especially useful on tracks containing snare drums.**

PATTERN PAGE FUNCTIONALITY ON MKI UNITS

On the MKI the pattern page is indicated by the LEDs <1/16>,<1/32:1> and <1/32:2>. When patterns are up to 16 steps in length only the <1/16> LED is lit. When the pattern is longer the <1/32:1> LED indicates the editing position being on the first page and <1/32:2> indicates the second page.

LIVE RECORDING

Live recording is the second method of recording drum trigs. In this recording mode, the **[TRIG]** keys are played like a drum set. The current kit is assigned to all **[TRIG]** keys, so all 16 tracks can be accessed at once.

1. To start recording using direct composing, hold **[RECORD]** while pressing **[PLAY]**. This starts the sequencer recording and the <RECORD> LED starts to flash.

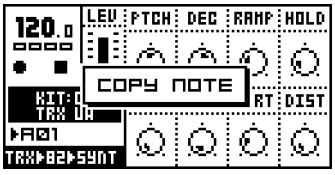
2. You can now lay down your beat in real time by triggering the machines in your kit with the **[TRIG]** keys.
3. To stop recording, press **[STOP]**. To exit recording but keep the sequencer playing the pattern, press **[PLAY]**.
4. To remove notes recorded, hold **[EXIT/NO]** and a **[TRIG]** key. All notes will be removed for the part of the track that is played while the **[EXIT/NO]** and **[TRIG]** keys are held.
5.

- **All live recorded data will be quantised to the current scale resolution (16th or 32nd notes).**

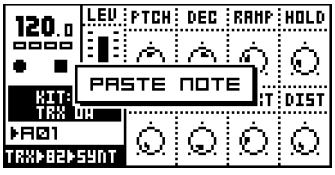
NOTE COPY

It is possible to copy a note trig, complete with all parameter lock settings, and paste it to a new location in the track.

1. Make sure you are in GRID RECORDING mode, indicated by the <RECORD> LED giving off a steady light.
2. Press and hold the note trig you want to copy and press the **[RECORD]** key. A window saying “COPY NOTE” will appear.



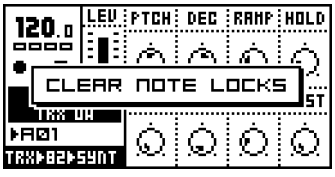
3. Hold the **[TRIG]** key correspondning to the location you want to paste the note to and press the **[STOP]** key to complete the paste operation. A window showing “PASTE NOTE” will be shown.



CLEAR NOTE PARAMETER LOCKS

Instead of removing the parameter locks from a note you can also use the clear note locks command.

1. Make sure you are in GRID RECORDING mode. The <RECORD> LED should be lit.
2. Hold and press the **[TRIG]** key you whose content you want to clear. Then press **[PLAY]** to clear the note. The message “CLEAR NOTE LOCKS” will appear.

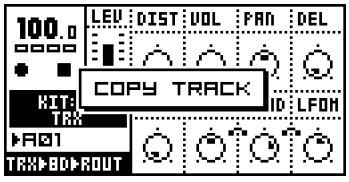


- **The clear note lock operation can be undone by performing the clear note operation one more time. The message “UNDO NOTE LOCKS” will be shown in the display.**

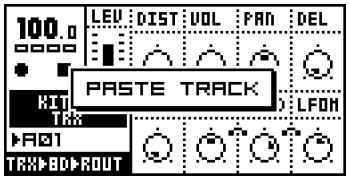
TRACK COPY

In GRID RECORDING mode, it is possible to copy the contents of one track to another.

1. Make sure you are in GRID RECORDING mode, indicated by the <RECORD> LED giving off a steady light. Select the source track using the ***SOUND SELECTION*** wheel.
2. Hold **[FUNCTION]** while pressing **[RECORD]** to copy the data in the track.The message “COPY TRACK” will be shown in the display.



3. Select the destination track using the ***SOUND SELECTION*** wheel.
4. Paste the data by pressing and holding **[FUNCTION]** and then pressing the **[STOP]** key. A message saying “PASTE TRACK” will be shown in the display.



- **The track data that is pasted consists of notes, the machine association, LFO settings and, if in EXTENDED mode, parameter locks. If the LFO is set to affect a parameter on the same track it is remapped as it is pasted. If the LFO is set to affect a parameter of another track the destination is kept but the LFO depth is set to zero to avoid confusing results.**
- **Pasting a track overwrites any previous notes, data and parameter locks.**

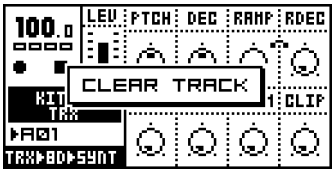
- **The paste track operation can be undone by holding down the [FUNCTION] key while pressing the [STOP] key. A message saying “UNDO TRACK” will be shown in the display.**

CLEAR TRACK

While in GRID RECORDING mode, it is possible to clear a track.

1. Make sure you are in GRID RECORDING mode. The <RECORD> LED should be lit.

2. When you are in the track you wish to clear, press and hold **[FUNCTION]**. Then press **[PLAY]** to clear the track. The message “CLEAR TRACK” will appear.

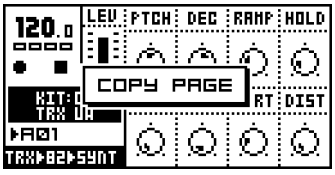


- **The clear track operation can be undone by performing the clear track operation one more time. The message “UNDO TRACK” will be shown in the display.**

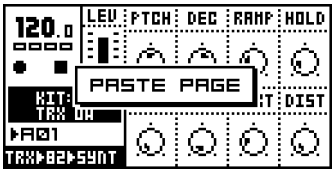
TRACK PAGE COPY

In GRID RECORDING mode you can also copy one page of trig data and paste it to another page.

1. Make sure you are in GRID RECORDING mode, indicated by the <RECORD> LED giving off a steady light. Select the source track using the ***SOUND SELECTION*** wheel.
2. Go to the page you want to copy by pressing the **[SCALE SETUP]** key.
3. Hold the **[SCALE SETUP]** key and press **[RECORD]**. A message saying “COPY PAGE” page will appear.



4. Go to the pattern page you want to paste the copied page into by pressing the **[SCALE SETUP]** key. Paste the data by holding **[SCALE SETUP]** while pressing the **[STOP]** key. A message saying “PASTE PAGE” will be shown in the display



- **Pasting a track page overwrites any previous notes, data and parameter locks.**

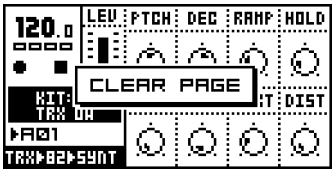
- **The track page paste operation can be undone by holding down the [SCALE SETUP] key while pressing the [STOP] key. A message saying “UNDO PAGE” will be shown in the display.**

CLEAR TRACK PAGE

It is also possible to clear a track page.

1. Make sure you are in GRID RECORDING mode.

2. When you are in the track you wish to clear, press and hold **[SCALE SETUP]**. Then press **[PLAY]** to clear the track. The message “CLEAR PAGE” will appear.

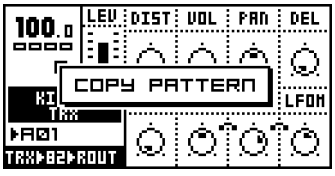


- **The clear track page operation can be undone by holding the [SCALE KEY] and pressing the [PLAY] key directly after the clear operation. The message “UNDO PAGE” will be shown in the display.**

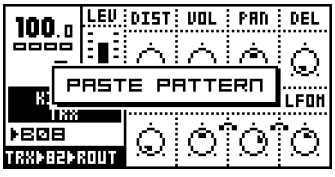
PATTERN COPY

To copy the contents of a a pattern to another, follow the steps below.

1. Make sure you are not in GRID RECORDING mode, indicated by the <RECORD> LED being unlit.
2. Select the source pattern. Hold **[FUNCTION]** while pressing **[RECORD]**. A message “COPY PATTERN” will be shown in the display.



3. Change pattern to the destination where you wish to paste your pattern data by using the **[BANK]** and **[TRIG]** keys.
4. Paste the data by pressing and holding **[FUNCTION]** and then pressing the **[STOP]** key. The message “PASTE PATTERN” will be shown in the display.



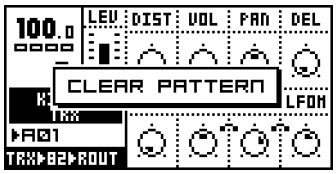
- **The pattern data that is copied consists of notes, the kit association (in EXTENDED mode) and parameter locks.**
- **Pasting a pattern overwrites any previous notes, data and parameter locks.**
- **The copy pattern operation will copy the whole pattern including unsaved kit changes.**

- **You can undo the paste operation by holding the [FUNCTION] key and pressing the [STOP] key.**

CLEAR PATTERN

It is possible to clear a whole pattern of its contents.

1. Make sure you are not in GRID RECORDING mode.
2. Select the pattern you want to clear. Press and hold **[FUNCTION]**. Then press **[PLAY]** to clear the pattern. A message “CLEAR PATTERN” will be shown in the display.



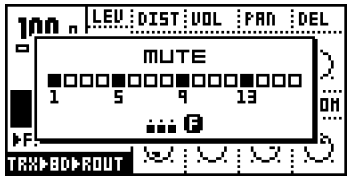
- **The clear pattern operation can be undone by immediately performing the operation one more time. A message saying “UNDO PATTERN“ will be shown in the display.**

TRACK MUTING

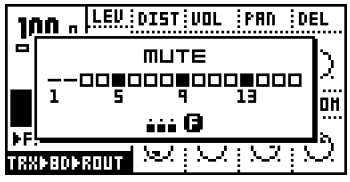
THE TRACK MUTE WINDOW

Tracks can be individually muted from the MUTE window. This is useful in a live setting, you can mute out sounds in a looping pattern, thus creating variations.

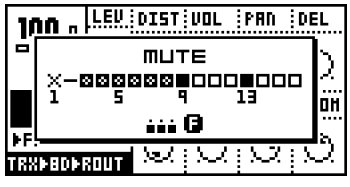
1. Hold **[FUNCTION]** while pressing **[A/E]** to call forth the MUTE window.



2. In this window, there are 16 squares representing the 16 tracks. Use the **[TRIG]** keys to toggle muting of the corresponding tracks. A muted track will be displayed as a “-” sign.



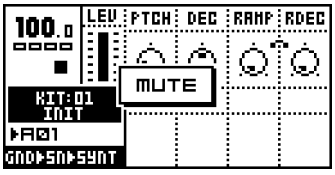
3. While holding **[FUNCTION]** and pressing the **[TRIG]** keys, the mute changes will be held until **[FUNCTION]** is released. A track that is currently muted but will be unmuted when **[FUNCTION]** is released is displayed as a “+” sign. A track that is currently not muted but will be muted when **[FUNCTION]** is released is displayed as an “X” sign.



4. Release the **[FUNCTION]** key to perform all the prepared mute operations.

MINIMISING THE MUTE WINDOW

While the MUTE window is active it occupies a large portion of the LCD screen. This can be disturbing if you want to work with mutes at the same time as you want to access the sound parameters.



To avoid this problem, the MUTE window transforms to a small centered window when a ***DATA ENTRY*** knob is accessed while in MUTE mode. To return to the big MUTE window, press the **[ENTER/YES]** button.

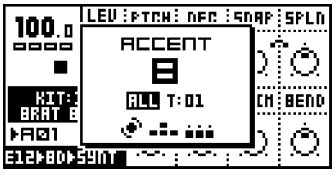
- **In songs, mutes can be programmed specifically per row. For more information, see section “SONG MUTE” on page 55.**
- **A muted track remains muted, even when the pattern is changed or if SONG mode is entered or exited.**
- **Drums already trigged and still making sounds will continue to sound when muted, but further trigs will be masked. This allows the drums to fade out in a natural way.**

- **Mute settings are remembered between reboots and Snapshots when being changed (not loaded).**

ACCENT TRACK

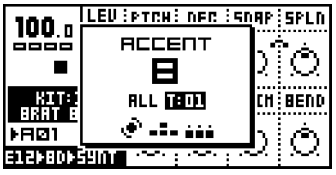
The Accent feature is used for quickly changing the accentuation for either a pattern as a whole or for individual tracks. Accent raises the volume at selected positions within a pattern or a track.

1. Hold down the **[FUNCTION]** key while pressing the **[B/F]** key. This brings forth the ACCENT window.



2. The accent value is set in steps up to 15, using **[UP]** and **[DOWN]** or the ***SOUND SELECTION*** wheel.

3. Toggle the steps to be accented by pressing the **[TRIG]** keys. Accent is per default set to ALL and will therefore affect the whole pattern. Place accents by pressing the **[TRIG]** keys. Press the **[RIGHT]** arrow key if you want to accent individual tracks.



4. Move on to the next accent track by holding down **[FUNCTION]** and pressing the **[TRIG]** key corresponding to the track whose accent you want to set.

- **You can copy, paste, clear and undo accent patterns, tracks and track pages. Press [FUNCTION] + either the [RECORD], [PLAY] or [STOP] keys while the ACCENT window is open to perform these operations on the accent pattern or track. Press [SCALE SETUP] + either the [RECORD], [PLAY] or [STOP] keys if you want affect the accent track page with these operations.**

SWING

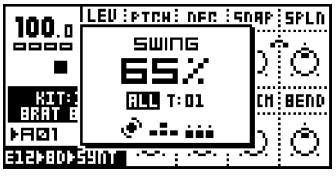
THE SWING WINDOW

Swing is used for adding a rhythmic “shuffle” to a pattern or to individal tracks. By default, the swing will affect every second 16th note, starting on step 2. This is how the swing pattern will be restored after a clear pattern operation and will give the traditional shuffle-style swing for a 4/4 single speed pattern.

When changing to double speed mode in the SCALE SETUP menu (see page 38) you need to modify the swing pattern to get the same result in single speed mode. In double speed mode, activate swing for every fourth note, starting with the third note.

More advanced swing effects can of course be made with other swing pattern setups, but that is outside the scope of this manual. To add swing to a pattern, follow the steps below.

1. Hold **[FUNCTION]** while pressing **[C/G]** to open the SWING window.

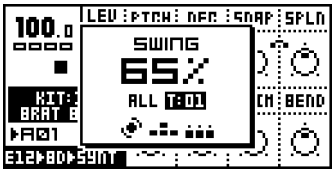


2. Use the ***SOUND SELECTION*** wheel to set the desired amount of swing. The amount of swing is set in percent. 50% is the default value, meaning that no swing will be applied, and the maximum value is 80%.
3. The **[TRIG]** keys are used for toggling which pattern steps the swing will influence.

You can also have different swing settings for individual tracks. Note though that every swing track will share the same percentage of swing. Here is how you set individual swing tracks.

1. Hold **[FUNCTION]** while pressing **[C/G]** to open the SWING window.
2. Use the ***SOUND SELECTION*** wheel to set the desired amount of swing.

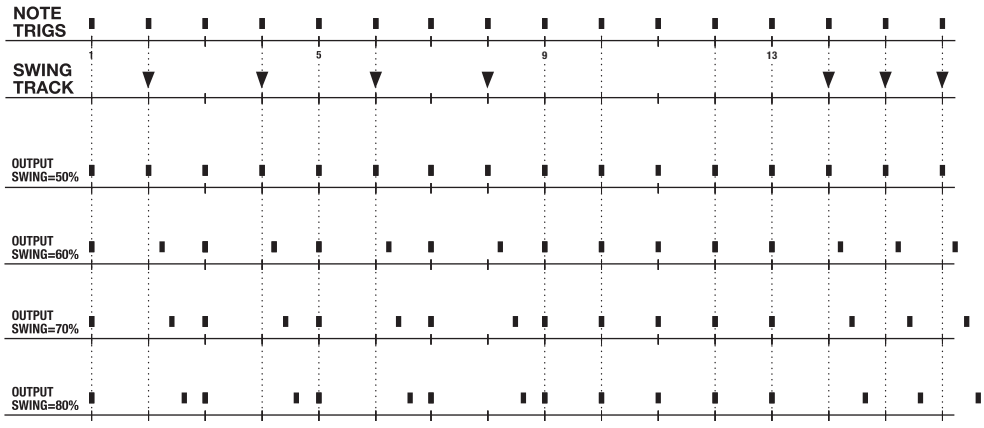
3. The **[TRIG]** keys are used for toggling which steps the swing will influence. Swing is per default set to ALL which will affect the whole pattern. Press the **[RIGHT]** arrow key in order to select individual swing tracks.



4. Once you have set the swing track and are satisfied, move on to the next swing track by holding down **[FUNCTION]** and pressing the **[TRIG]** key corresponding to the track whose swing you want to set. Note though that all swing tracks use the same percentage of swing.

Below is a figure illustrating how notes are affected by various amounts of swing.

SWING ILLUSTRATION: OUTPUT TIMING FROM VARIOUS AMOUNT SETTINGS



- **You can copy, paste, clear and undo swing patterns and tracks. Press [FUNCTION] + either [RECORD], [PLAY] or [STOP] while the SWING window is open to perform these operations. You can also copy, paste, clear and undo a swing track page by pressing [SCALE SETUP] + either the [RECORD], [PLAY] or [STOP] keys.**
- **Try to swing only one or two tracks, for example the hi-hats, for creating rhythms with a different feel compared to un-swinged patterns.**
- **Experiment with using only a few swing trigs in a swing pattern. This will create just a few notes that are slightly off beat which can add a great deal of movement to a pattern.**

PARAMETER LOCKS

A parameter lock is a parameter locked to a certain value for a specific step. Parameter locks can be programmed in GRID RECORDING mode and recorded in LIVE RECORDING mode. For parameter locks to come into effect, you need to be in EXTENDED mode.

All SYNTHESIS, TRACK EFFECT and ROUTING parameters can be locked. Parameter locks are a very important part of creating unique and dynamic patterns with the Machinedrum.

PARAMETER LOCKS IN GRID RECORDING MODE

To program parameter locks in GRID RECORDING mode, follow the steps below.

1. First make sure you are in GRID RECORDING mode, by verifying that the <RECORD> LED is firmly lit.
2. Select the track you wish to do parameter locks for, using the ***SOUND SELECTION*** wheel. Select a parameter page (SYNTHESIS, EFFECTS or ROUTING) for the ***DATA ENTRY*** knobs.
3. Press and hold the **[TRIG]** key for the step where you want to add a lock. While holding the **[TRIG]** key, you can now tweak the parameter of your choice with the ***DATA ENTRY*** knobs. You can tell that the parameter has been locked by it being inverted on the LCD screen. When the **[TRIG]** key is released, the trig for that position will hold the parameters that you just programmed. You can also click an unlocked ***DATA ENTRY*** knob once to lock it to its current value.
4. You can verify which steps have parameter locks by looking at the <TRIG> LEDs. A firmly lit <TRIG> LED means that it is not locked, whereas a rapid interval flash indicates it does have one or more parameter locks.
5. If you want to view the current parameter lock settings for a step, hold the **[TRIG]** key. You can tell which parameters are locked by them being inverted on the screen.
6. To remove all parameter locks for a step, hold the **[TRIG]** key and press the **[PLAY]** key. You can also remove the locks by deleting the trig and reinserting it.
7. To remove one of more parameter lock for a step, hold the **[TRIG]** key and click the ***DATA ENTRY*** knob you want to remove the lock for. You can tell that the lock has been removed by the inversion disappearing for the parameter clicked.

- **A lock is a snapshot of a parameter setting. It changes the parameter value from its original value stored in the kit, but only for that note trig. The parameter will change back to its default state on the next trig if no further parameter locks are made for that note and parameter.**
- **A pattern can have a total of 64 individually locked parameters divided freely between all tracks and parameters. When a parameter is locked on one step, that parameter can be locked to individual values on all the steps of the track.**
- **Parameter locks only work in EXTENDED mode, but changing mode to CLASSIC will not affect any pre-recorded locks. They will remain in the pattern, but they will have no effect until the mode is set to EXTENDED again.**

PARAMETER LOCKS IN LIVE RECORDING MODE

In LIVE RECORDING mode, you can record parameter locks live. To do this, follow the steps below:

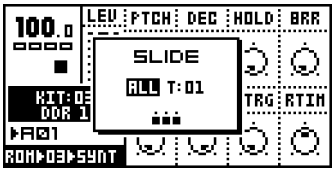
1. Go into live recording mode by holding down the **[REC]** button and then pressing the **[PLAY]** key.
2. Select the track for which you wish to enter parameter locks by using the ***SOUND SELECTION*** wheel or by pressing **[FUNCTION]** + the corresponding **[TRIG]** key. Select a parameter page (SYNTHESIS, EFFECTS or ROUTING) for the ***DATA ENTRY*** knobs.

3. Record parameter locks by changing the corresponding ***DATA ENTRY*** knob while live recording. When changing a parameter, the parameter lock will be set on the next note played on the track. If a parameter is not changed between two drum trigs no parameter lock will be made.
4. To remove specific parameter locks, press and hold **[EXIT/NO]** and a ***DATA ENTRY*** knob. All parameter locks will be removed for that specific parameter and track on the steps of the track that is played.

- **It is often a good idea to edit and fine tune the parameter locks in GRID RECORDING mode, after recording them in LIVE RECORDING mode.**

PARAMETER LOCK SLIDE

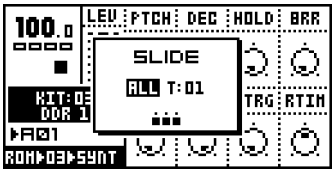
The default behaviour for parameter locks is that the value changes exactly when the step is played and not in between. By using slides, you can have the value of a parameter locked on one step slide gradually to the value on the next. This behaviour is controlled by the slide pattern or the slide tracks.



For a parameter to slide it needs to be parameter locked at two separate steps. If a slide trig is set to the same step as there is a parameter lock, the parameter will slide to the next parameter locked value. The speed of the slide is relative to the current tempo and the slide is completed when the next position with a drum trig is reached.

To set slide trigs, follow the instructions below.

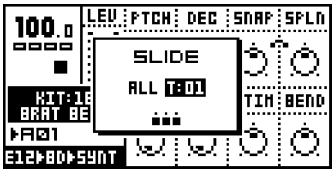
1. Hold **[FUNCTION]** while pressing **[D/H]** to open the SLIDE window.



2. Use the **[TRIG]** keys to select the steps for which parameter locks will slide to their next locked value.

To set individual swing tracks, just follow the instructions below.

1. Hold **[FUNCTION]** while pressing **[D/H]** to open the SLIDE window.
2. Slide is per default set to ALL which will affect the whole pattern. Press the **[RIGHT]** arrow key to be able to set individual slide tracks.



3. Once you have set the slide track and are satisfied, move on to the next slide track by holding down **[FUNCTION]** and pressing the **[TRIG]** key corresponding to the track where you want to place slide notes. Use the **[TRIG]** keys to select the steps for which parameter locks will slide to their next locked value.

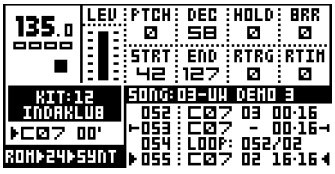
- **The speed of the slide is relative to the current tempo. The slide is always completed exactly when the next position with a drum trig is reached.**

- **Only parameters that are locked on the steps selected in the slide mode will slide to their destination. Parameters that are unlocked will not slide.You can copy, paste and clear slide patterns and tracks. Press [FUNCTION] + either [RECORD], [PLAY] or [STOP] while the SLIDE window is open to perform these operations. You can also copy, paste and clear a slide track page by pressing [SCALE SETUP] + either the [RECORD], [PLAY] or [STOP] keys. The paste and clear actions can be undone.**

SONG MODE

A song is basically a number of patterns which are played in sequence. Each step in a song can have its own settings for pattern start position, pattern length, tempo, and mute information. You can also loop segments of a song or jump between locations within a song. All this makes for a very powerful way of arranging your patterns. A song can be up to 256 steps long, and the memory holds 32 songs.

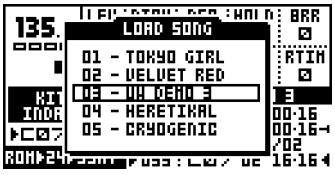
You enter song mode by pressing the **[PATTERN/SONG]** key, so that the <SONG> LED is lit. The screen will change to make room for the song list:



LOAD SONG

1. To load a song from memory, you first need to open the SONG window by pressing **[FUNCTION]** and the **[KIT]** key.

2. Move to the LOAD icon and press **[ENTER/YES]**.



3. Choose the song you wish to load from the list by using the **[UP]** and **[DOWN]** arrow keys, and press **[ENTER/YES]** to execute.

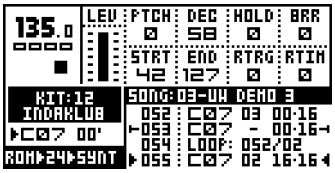
- **Loading a song will destroy any unsaved current song settings. Make sure to store unsaved work you wish to keep before loading a song.**
- **The song only holds the information on what patterns should be played in sequence. Accurate playback of a song depends on the patterns it uses being unchanged since saving. Otherwise the song might sound differently.**

- **The Machinedrum recognises MIDI Song Pointer Position, which means that you can control the position in the song list from an external sequencer. Note that you cannot reach song positions inside loops.**
- **Pattern/Song mode selection is remembered between reboots.**

PLAYING A SONG

1. Make sure that you are in SONG mode, and that a song is presently loaded.
2. To start the playback of a song, press **[PLAY]**. Pressing **[PLAY]** again pauses the playback.
3. To stop the playback, press **[STOP]**.

NAVIGATING A SONG



The **[UP]** and **[DOWN]** keys can be used to manoeuvre the two indicators on the left and right sides of the new song list. Pressing **[ENTER/YES]** will move the song pointer to the position of the arrows.

When playing the song the arrows will blink and at every fourth blink they point in the direction of the song position pointer. When repeating a row in a song the number of turns left is indicated to the right of the current pattern display.

In song mode **[STOP]** holds the position and another **[STOP]** moves the position pointer to the beginning of the song.

- **Songs are played until the end and will then stop. Of course, infinite loops can make songs that never end.**
- **The current tempo will change, if the song has tempo changes in it.**

SONG EDITING

The Machinedrum song editor is where the song is built. Here patterns are assigned to the song. The behaviour of the patterns is also set in the song editor.

1. Hold the **[FUNCTION]** key and press the **[KIT]** key to open the SONG window.

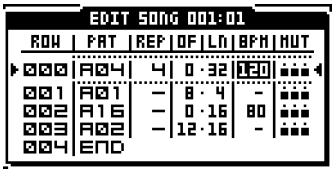
2. Move to the EDIT icon and press **[ENTER/YES]** to open the EDIT SONG screen.

This is where you arrange your patterns into a song. You can edit the song while it is playing. The two filled arrows on each side of one of the steps are the song position pointers. They indicate which song step the sequencer is currently playing. In the header of the menu, next to the text “EDIT SONG” there is a counter, indicating how many bars and beats the song has played.

3. Use the **[UP]** and **[DOWN]** keys to select the song row you wish to edit. The **[LEFT]** and **[RIGHT]** keys allow you to move the focus between the pattern, repeat, offset, length, BPM and mute settings. The ***SOUND SELECTION*** wheel alters the value of each setting.
4. The pattern settings are located in the PAT column. The ***SOUND SELECTION*** wheel is used for choosing between patterns and functions. You can also select a pattern by holding the **[BANK A-H]** key and pressing a **[TRIG]** key.

5. The END mark indicates the end of the song. When this point is reached, the sequencer will stop. You can also program loops in this column. See section “SONG LOOP”, on page 54 for more information on loops.
6. The REP column controls how many times the current pattern will be repeated for that particular row in the song.

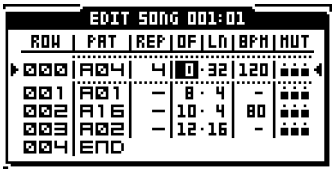
7. Each row in the song can have its own BPM setting. You set the tempo in the BPM column. If you do not specify a BPM value on a step, the sequencer will use the last one used in the song. If a song does not have any tempo settings, the sequencer will use the current tempo.



- **To insert a step in the song, use [FUNCTION] together with the [DOWN] key.**
- **To remove a step in the song, use [FUNCTION] together with the [UP] key.**
- **Copy, paste, clear and undo functions operate on rows in song edit**

SONG ROW OFFSETS AND LENGTHS

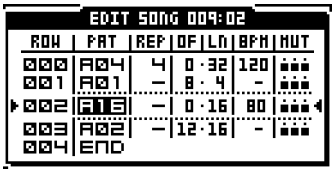
The OF LEN column can be used to override the default start offset and length settings for the pattern assigned to that row.



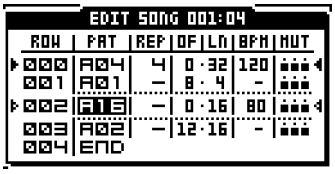
The default start of a pattern is always zero. This means it will start to play from the beginning. The default length is set from scale setup (see section “SCALE SETUP”, on page 38). The song row offset and length functions can be used to build complex rhythm structures. It can also be used for exchanging certain parts of a pattern for certain song rows in order to add, for example, a fill at the end of a pattern.

SONG TRANSPORT

It is possible to start playback from any row position in a song. To do this, move the editing focus to the row you wish to start the playback from and press the **[ENTER/YES]** button. If not in play mode, you will see the two filled arrows indicating the replay position move to the current row.

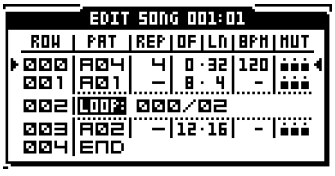


If the song is currently playing when you select another row, you will first get two hollow arrows on each side of the current row. The hollow arrows indicate which row will play next once the current row reaches its end.



SONG LOOP

Song loops are a useful tool when creating a song. By using this command you can limit the number of rows and make the structure of the song clearer. They can also be used for setting up pattern loops in order to extend the Machinedrum’s limit of maximum 64 steps per pattern.

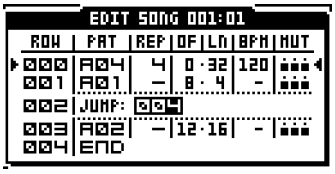


To create a loop, turn the ***SOUND SELECTION*** wheel in the PAT column to right before the A01-pattern, after the END indicator. When a loop is selected the second edit column controls which row to loop from. Use the ***SOUND SELECTION*** wheel or **[BANK A-H]** together with a **[TRIG]** button to change what row to loop to. The third column selects how many times the loop should be executed. Use the ***SOUND SELECTION*** wheel to select how many times the loop shall be executed. The loop count can also be set to infinity.

- **Loops can be nested.**
- **A set of infinite loops can be very useful in a live setting. With a set of infinite loops, the song transport functions can be used to jump between the looping patterns.**

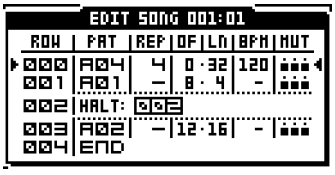
SONG JUMP

A loop can also be converted into a jump. A jump will refer to the song pointer position to the row that you select. Insert a jump by turning the ***SOUND SELECTION*** wheel so that the number of the second loop row becomes a number that is greater than the current row number. The jump command will appear and no loop count column will be available. Use the [RIGHT] arrow key to move the focus to the column where you insert which song row you want the song position pointer to jump to.



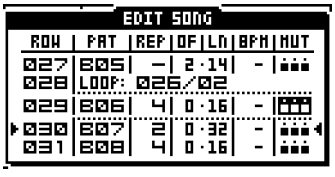
SONG HALT

If you set the loop to loop to the current row it will change to a HALT statement. When the song pointer reaches a HALT statement it will pause the playback. You then need to use the song transport controls as described on page 54 to select a new position to start from.



SONG MUTE

In songs, you can mute individual tracks for each row. The mute pattern for each row is accessed by moving the cursor to the MUT column and then pressing **[ENTER/YES]**.Tracks muted using song mute can not be unmuted using pattern mute.



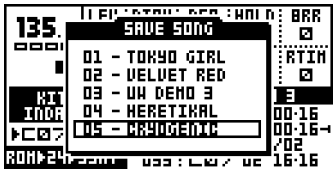
This takes you to the familiar MUTE window as seen below.

In this window you can set the tracks that will be muted for the row. The standard pattern mute, set by **[FUNCTION]** + **[A/E]**, applies as well, so tracks muted there as well as in the song mute are silent.

SAVE SONG

1. Open the SONG window by holding **[FUNCTION]** and pressing the **[KIT]** key.

2. Use the **[LEFT]** and **[RIGHT]** keys to move to the SAVE icon. Press **[ENTER/YES]** to call the SAVE SONG menu.



3. On the screen, you can find a list of the songs stored in memory. Use the **[UP]** and **[DOWN]** keys to choose among the 32 song slots. Press **[ENTER/YES]** to select the slot where you want to save your song.
4. A window opens where you can name the song:

   Select characters using the ***SOUND SELECTION*** wheel. The arrow **[LEFT]** and **[RIGHT]** keys move the cursor backwards and forwards on the line.
5. Pressing the **[FUNCTION]** key gives access to the “high score” selection method, in which you see all characters at the same time. Keep the **[FUNCTION]** key held while navigating using the **[LEFT]**, **[RIGHT]**, **[UP]** and **[DOWN]** buttons. Release the **[FUNCTION]** key, when you have found the right letter.

6. Once you are done naming the song, press **[ENTER/YES]** to save it.
7. If you want to exit without saving a song, press **[EXIT/NO]**.

- **The commands copy, paste, clear and undo are available in the SAVE SONG and LOAD SONG menus.**

GLOBAL SETTINGS

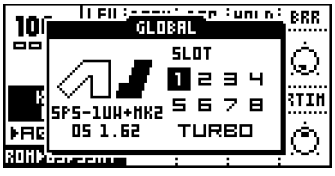
The Machinedrum offers 8 different global settings positions. The multiple global setups are useful for using the Machinedrum in more than one setup. You can have one setup for studio use and another for live use, or maybe several different setups for different parts of your live set.

The items listed below are available in a the GLOBAL SETTINGS menu.

- **MIDI base channel**
- **TRACK/PATTERN mappings for a MIDI keyboard**
- **Local control on or off**
- **Program change settings**
- **Mechanical settings (MKII units only)**
- **Output routings of tracks**
- **Trig settings**
- **Sysex send of pattern, song and kit data**
- **Sysex receive of pattern, song and kit data**
- **Sample manager (Machinedrum UW models only)**
- **+Drive settings (+Drive models only)**
- **Tempo and Sync settings**
- **Turbo menu**

To select a global setting and edit it:

1. Press **[FUNCTION]** and then the **[PATTERN/SONG]** key to open the GLOBAL SETTINGS menu.

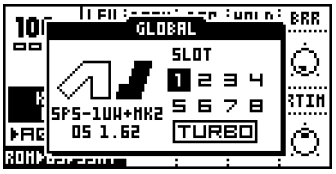


2. Go to the global setting slot you wish to use, and press **[ENTER/YES]** to select it.
3. If you wish to enter the menu for the selected slot, you can either press **[ENTER/YES]** once more or move the focus to the ENTER field and press **[ENTER/YES]**.

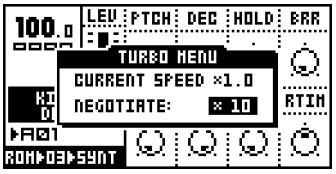
TURBO MENU

The TURBO menu, only available in OS 1.53 and higher, allows you to use the Turbo protocol when connecting the Machinedrum to other units that have the Turbo protocol imple-

mented. This will speed up MIDI transfer times considerably, which is handy if you for example want to transfer sysex data or samples to another Machinedrum.



1. Connect the MIDI OUT of your Machinedrum to the MIDI IN of the other unit and the MIDI IN of your Machinedrum to the MIDI OUT of the other unit.
2. Press **[FUNCTION]** + **[PATTERN/SONG]** to open up the GLOBAL menu. Use the **[ARROW]** keys to select TURBO. Press **[ENTER/YES]**.



3. CURRENT SPEED shows the current multiplier of the MIDI transfer rate. When not connected to a device using Turbo protocol compatible software, the speed will therefore be x1.0. Select which NEGOTIATE speed you want use. The Machinedrum defaults to x10, but this value can be lowered should it be needed. Press the **[ENTER/YES]** button to start to negotiate. The CURRENT SPEED value will display the change of the MIDI transfer rate.

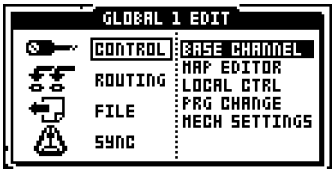
- **If you link two Machinedrums together where one of them is a MKI model, you might not be able to get a CURRENT SPEED value exceeding 6.7x.**

CONTROL

Here you choose how the Machinedrum will function in a MIDI context. For MKII versions, this menu also allows you to select the resolution of the encoders.

BASE CHANNEL

Here you set which MIDI channels the Machinedrum will respond and send data to.



Follow these steps to set the MIDI base channel.

1. Select the CONTROL row in the GLOBAL EDIT menu. Then select BASE CHANNEL and press **[ENTER/YES]**.
2. Select base channel using the **[UP]** and **[DOWN]** arrow keys. Press **[ENTER/YES]** to make the actual selection.

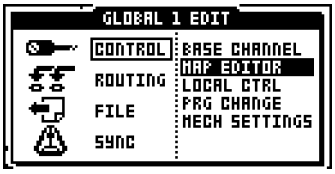
The MIDI base channel is the first MIDI channel that the Machinedrum will listen to and send data to. If the base channel is set to 1, the Machinedrum will use channels 1 through 4 to send and recognise MIDI data. The reason for using four channels is to allow for easy access of control change messages to all parameters.

By using four channels in total, we have avoided using “non-registered parameters” (“NRPN”), which are usually hard to make good use of from keyboards and from many computer sequencers. In Appendix B and C, we will look closer at how to control the Machinedrum externally.

- **If the MIDI base channel is turned below “1-4” it will display “--”. The Machinedrum will then not send out nor react to MIDI data. System common and System real time MIDI messages, such as MIDI timing and MIDI synchronization, are not affected. Use the “--” setting when you want to control other synthesizers but not have them react to the internal sequencer of the Machinedrum. You can of course still control other synths using the MIDI machines.**

MAP EDITOR

The MAP EDITOR is used to setup how the Machinedrum will react to incoming MIDI notes. You can trigger drum sounds, patterns and the start, stop and play functions of the sequencer.



1. Select the CONTROL row in the GLOBAL EDIT menu. Then select MAP EDITOR and press **[ENTER/YES]**.

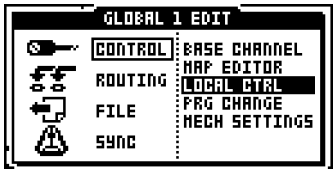
2. In the GROUP column, choose for which trig category you want to edit the mapping. TRACK allows you to assign which MIDI notes that should trig which track sounds, PAT A-H maps MIDI notes to specific patterns and finally CTRL allows you to let MIDI notes control the transport control of the Machinedrum. Then press the **[RIGHT]** key to enter the MAPPING column for the chosen group.

3. From here you set the actual mappings for the options available for the group. Use the ***SOUND SELECTION*** wheel to select a MIDI note to map to track, pattern, etc. Then press **[ENTER/YES]** to confirm your choice. Please note that each MIDI key only can be mapped to one function at once. If you select a MIDI key that is already in use, the previous mapping will be removed.
4. In the TRIG window you set how the Machinedrum should react when receiving a trig signal. When set to GATE the Machinedrum pattern will start to play once receiving a MIDI NOTE ON command and stop when receiving a MIDI NOTE OFF command. This basically means that a pattern will play for as long as a key is being held on the external trigging device. START will immediately initiate the new pattern once trigged. QUE functions much like how the internal Machinedrum sequencer works, if a pattern is playing and a new MIDI note is received, the pattern currently playing will play to its end before patterns are switched.

- **If you map a track to "--" it will neither respond to nor send out MIDI NOTE ON or NOTE OFF messages.**
- **You can also use an external MIDI device when assigning MIDI notes. Move to the row for which you want to change mapping, and then send a NOTE ON message to the Machinedrum MIDI IN port (i.e. play the note on a connected keyboard).**

LOCAL CONTROL

This menu is used for turning local control off or on.

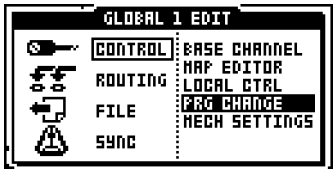


1. Select the MIDI row in the GLOBAL EDIT menu. Then select LOCAL CTRL and press **[ENTER/YES]**.

2. The default setting is ON. When set to OFF, the Machinedrum will not trig internal sounds when using the sequencer or pressing the **[TRIG]** keys. It will not react to the ***DATA ENTRY*** knobs either. The unit will only make sounds when trigged by incoming MIDI data. However, MIDI data is still being sent out from the Machinedrum.

PROGRAM CHANGE

The Machinedrum can both transmit and receive MIDI Program change messages. Here you decide how the Machinedrum should react to these messages.

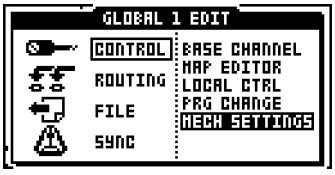


1. Select the CONTROL row in the GLOBAL EDIT menu. Then select PRG CHANGE and press **[ENTER/YES]**.

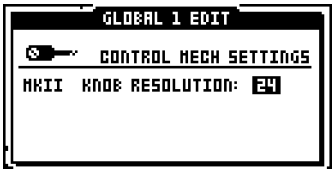
2. You will be presented with available alternatives for handling program changes. When the program change setting is set to OFF, the Machinedrum will neither transmit nor receive program change messages. If set to IN the Machinedrum will respond to incoming program changes, but will not send out any program change data when a new pattern is selected. If set to OUT the Machinedrum will send program change messages when a new pattern is selected, but will not respond to incoming program changes.

MECHANICAL SETTINGS (MKII UNITS ONLY)

If you have a MKII unit you can select the resolution of the encoders.



1. Select the CONTROL row in the GLOBAL EDIT menu. Then select MECH SETTINGS and press **[ENTER/YES]**.



2. The default resolution setting is 24. Turning an encoder one revolution will cover 24 parameter steps. If you increase the resolution to 32, turning an encoder one revolution will cover 32 parameter steps.

ROUTING

In the routing menu tracks can be assinged to the six available track outputs. You can also select how the Machinedrum will react to incoming trig signals.

OUTPUT

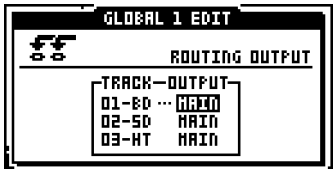
Here the output routing of the tracks can be changed.

By default all tracks are routed to the main output. The main output consists of the outputs A and B configured as a stereo pair. In the OUTPUT menu you can choose to route tracks to the individual outputs, A to F. This is useful for placing certain tracks on separate mixer channels, or affecting certain tracks with external effects.

Once you route a track to a single output (A,B,C,D,E or F) you bypass the STEREO MASTER EFFECT system, which is only available for sound leaving the main output. You can route more than one track to an output if you want to.

To change the track routing to the outputs, follow these steps:

1. Select ROUTING in the GLOBAL EDIT menu. Then select OUTPUT and press **[ENTER/YES]**.



2. Use the **[UP]** and **[DOWN]** arrow keys to select the track that you wish to route.
3. Select the output that you wish to route, using the **[LEFT]** and **[RIGHT]** keys.

- **It is possible to route some tracks to the main outputs and others to A or B. This is probably not very useful, as the tracks routed to A or B will appear as non-effected tracks hard panned to either left or right. If you use A and/or B as individual outputs, you probably do not want to use the MAIN A+B stereo out at all.**

TRIG IN A/B

The Machinedrum allows the two audio inputs to be used for connecting external drum pads. The trig system is prepared for standard piezo elements as used by most pads and

require no amplification before being handled by the Machinedrum. It is possible to set different trig settings for input A and B.

1. Select the ROUTING row in the GLOBAL EDIT menu. Move the focus to TRIG IN A by pressing the **[ENTER/YES]** key. This will open the trig setting menu for the external input.

GATE sets the input gate sensitivity. A low value makes the trig more sensitive.

SENS sets the sensitivity of the inputs. The higher the sensitivity the higher the reaction to weak signals.

VMIN and **VMAX** sets the minimum and maximum velocity mapping. This controls the dynamic range of the connected trig pads.

DEST defines which track sound will be trigged by the incoming signal.

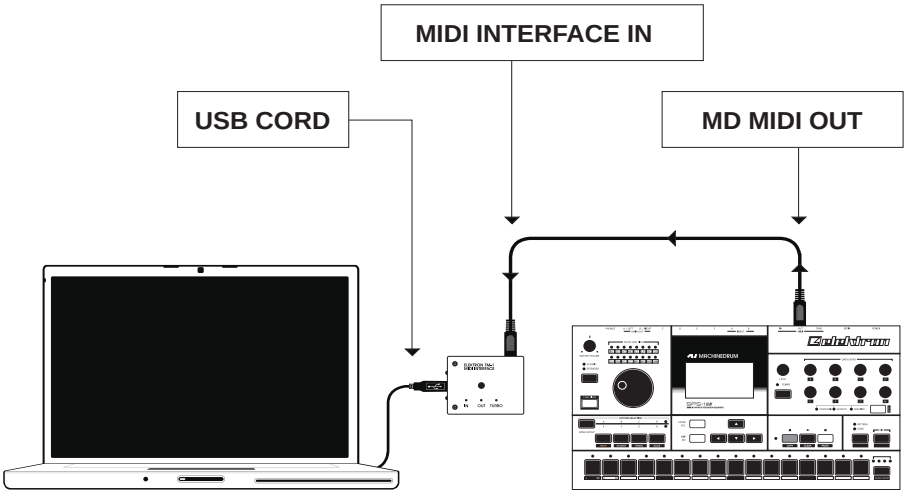
FILE

In this menu, both SysEx and sample transfers are handled. If you have a unit equipped with a +Drive, all relevant +Drive menus are found here as well.

SYSEX SEND

The sysex send function is used for dumping patterns, songs, kits, global settings or everything at once. It is also possible to dump specific ranges of patterns, kits or songs.

Before sending, make sure the connections are correct. See the figure below for an example of what the connections could look like when sending sysex data to a computer.



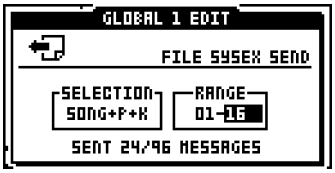
1. Select the FILE row in the GLOBAL EDIT menu. Then select SYSEX SEND and press **[ENTER/YES]**.

2. Select the preferred data send method using the **[UP]** and **[DOWN]** arrow keys.

3. If the selected send method has the option to select ranges or a specific number, you can now move the focus to the right. After that, you use **[UP]** and **[DOWN]** or the ***SOUND SELECTION*** wheel to select the lower and upper limit of the range. For pattern selection **[BANK A-H]** together with **[TRIG]** buttons can also be used.

4. Make sure that the device you are sending the data to is ready and waiting.

5. To perform the send, press **[ENTER/YES]**. You will see a sysex message counter on the bottom of the screen indicating how many sysex messages have been sent out of the total amount of messages.



- **You can always cancel the SYSEX SEND operation by pressing the [EXIT/NO] button.**

ALL DATA SYSEX SEND

Use this option when you need to back up the entire memory of your Machinedrum. All patterns, songs, kits and global settings will be transmitted.

- **No range can be selected for this send method.**
- **Because of the large amount of data transmitted, it may take several minutes to complete the operation.**
- **On UW versions of the Machinedrum the samples are NOT sent using ALL DATA SYSEX SEND. Please refer to section “SAMPLE MANAGER (UW MODELS ONLY)”, on page 70**

- **Speed up sysex dump times tenfold by using the Elektron TM-1 MIDI interface.**

GLOBAL SYSEX SEND

Sends all or a specific global setting from the 8 slots available.

SONG + PATTERN (+ KIT) SYSEX SEND

Sends the song or songs with the patterns used in them. If you are in EXTENDED mode, you will also send the kits that are used in the patterns. In CLASSIC mode, you will only

send patterns and song data. Even if you currently are in CLASSIC mode, parameter locks will still be transmitted. The range selects what song(s) will be sent.

PATTERN (+ KIT) SYSEX SEND

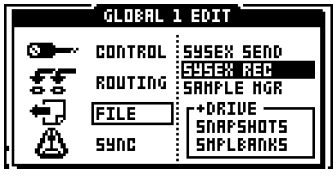
Sends a pattern or several patterns. If you are in EXTENDED mode, you will also send the kits that are used in the patterns. In CLASSIC mode, you will only send patterns. Although sent from CLASSIC mode, existing parameter locks will be transmitted. The range selects the span of consecutive patterns that you wish to send.

KIT SYSEX SEND

Sends a kit or several kits. The range selects the span of consecutive kits.

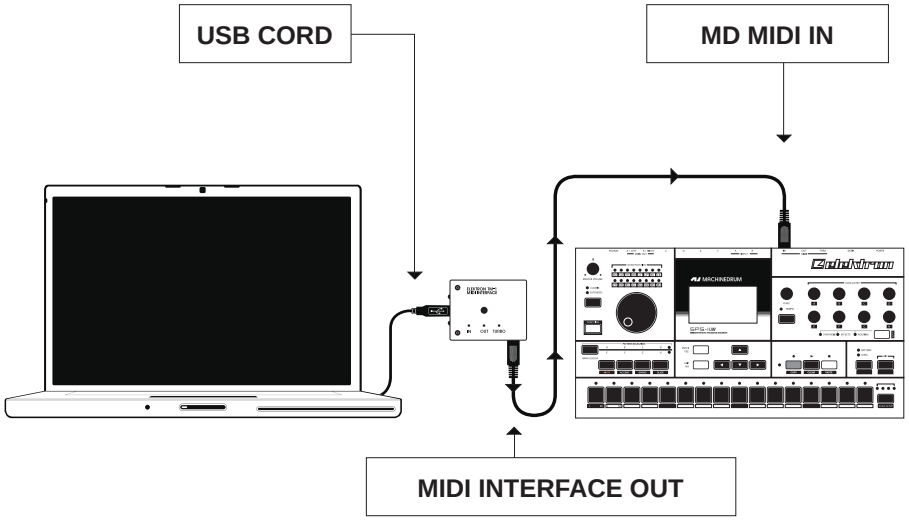
SYSEX RECEIVE

The sysex receive function makes it possible to restore previously stored data back into the Machinedrum.



- **Note that it is also possible to receive sysex data without being in the SYSEX REC menu. In fact, you can receive sysex data anytime without having to be in a specific menu. For more info about this, please see “GENERAL SYSEX RECEIVE” on page 67.**

Before receiving data, make sure you have connected the Machinedrum properly to the external device. See the figure below for an example of what the connections could look like when receiving sysex data from a computer.



There are two methods for storing received sysex data, ORIGINAL PLACE and SPECIFIC PLACE. There is also an additional method called VERIFY, which only verifies that the messages received are correct.

- **Receiving data works the same in both the CLASSIC and the EXTENDED edit modes. If, for instance, patterns are saved with their kits (in EXTENDED mode), and you receive them back while in CLASSIC mode, you will get the kits as well.**

- **To ensure that your data was received and stored correctly, please use the VERIFY option.**

GENERAL SYSEX RECEIVE

You can send sysex data at any time to the Machinedrum. The playback of the sequencer will not even halt. This applies to sysex data containing information about patterns, kits and songs. Note that the only indication of a general sysex receive taking place is the blinking pixel in the upper left corner of the LCD signalling activity on the MIDI in port. This general transfer method works just like the original place sysex receive described below.

If you need to place the sysex data at a certain location in the Machinedrum, you need to enter the SYSEX REC menu.

ORIGINAL PLACE SYSEX RECEIVE

If you still want to use this menu, follow the instructions below.

To load sysex data into the same place as it was originally saved, follow the steps below:

1. Make sure you have connected the Machinedrum MIDI IN port to the MIDI OUT port of the device that is sending the sysex data.

2. Select the MIDI row in the GLOBAL EDIT menu. Then select SYSEX REC and press **[ENTER/YES]**.

3. Select the ORIG receive method using the **[UP]** and **[DOWN]** arrow keys.
4. Press **[ENTER/YES]** to start receiving data. A message displaying “WAITING...” shows up in the menu.

5. Now initiate the data send from the sending device.
6. A counter will display how many messages have been received, and, if you have a bad connection, how many erroneous messages have been received and ignored.

- **Received data will overwrite any previous data in the memory in the positions where it is placed. Make sure you have backed up any important data using sysex send.**
- **Receiving sysex data may take a while, depending on the size of the transmitted data.**

- **You don’t have to enter this menu for receiving sysex data. Just send the data to the Machinedrum at any time and it will store it where it was originally saved. See “GENERAL SYSEX RECEIVE” on page 67 for more info.**

SPECIFIC PLACE SYSEX RECEIVE

To relocate the data that you send to the Machinedrum, you need to use the SPECIFIC receive method. You can specify starting positions for each category of data. Since the Machinedrum does not know in advance what kind of and how much data you will send, it will place the data beginning with the start position you specify. For example, if you specify KIT:03 and receive four kits, positions 3 to 7 will be written over no matter where the received kits were originally placed.

To receive the data starting from a specified position, you need to:

1. Make sure that you have connected the Machinedrum MIDI IN port to the MIDI OUT port of the device that is sending the sysex data.

2. Select the FILE row in the GLOBAL EDIT menu. Then select SYSEX REC and press **[ENTER/YES]**.
3. Select the SPEC receive method using the **[UP]** and **[DOWN]** arrow keys.

4. Move to the box to the right where you can select the starting position for the sysex data that you will send to the Machinedrum. The first position, KIT, is the kit number that you wish to start from. The second, PAT, is the pattern start position. The third, SONG, is the song start position, and finally there is GLOB, which is the global setting start slot. You set the parameters with the **[UP]** and **[DOWN]** keys. You can leave the other parameters blank and only specify the KIT parameter if, for instance, you only want to transfer kits. Columns which are not specified are treated as they would be in ORIG mode.

5. Press **[ENTER/YES]** to start receiving data. The message “WAITING...” shows up in the menu.

6. Now initiate the data send from the sending device.
7. A message is shown on screen for each chunk of data received.

SYSEX VERIFY

When the verify function receives a sysex dump it will check if the dump contains any errors. Since it is only a diagnostics tool, it will not overwrite any already existing data inside the Machinedrum.

1. Make sure that you have connected the Machinedrum MIDI IN port to the MIDI OUT port of the device that is sending the sysex data.
2. Select the FILE row in the GLOBAL EDIT menu. Then select SYSEX REC and press **[ENTER/YES]**.

3. Select the VERF receive method using the **[UP]** and **[DOWN]** arrow keys.

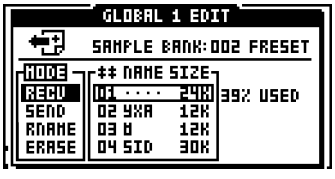
4. Press **[ENTER/YES]** to start receiving data. The message “WAITING...” shows up in the menu.

5. Initiate the data send from the sending device.
6. When the dump is finished you will see how many messages that were received and if the dump contained any errors. No information has been overwritten.

SAMPLE MANAGER (UW MODELS ONLY)
This menu is where samples can be loaded, sent, erased, renamed etc.

Samples are transferred to and from the Machinedrum UW via the MIDI ports. MIDI sample Dump Standard (SDS) is used to transfer samples. This standard is supported by various sample editors, but we recommend our free sample dump program C6, which you can find on the Elektron website. For more information about how to use C6, please check the C6 manual which is also available at the Elektron homepage.

There are two methods available for transferring samples: Closed loop and open loop. Closed loop needs both the MIDI IN and OUT ports from the sending device connected to the MIDI IN and OUT ports of the Machinedrum UW. Closed loop offers resending and correction of erroneous data. If only the MIDI OUT port on the sending device is connected to the MIDI IN port on the Machinedrum UW, the transmission will resort to open loop transfer which offers no error correction. During transmission of the samples the method used will be stated at the bottom of the screen.



In the MODE column you choose which action you want to perform. You can RECEIVE, SEND and ERASE and RENAME samples. In the NAME/SIZE column all loaded samples and their respective sizes are listed. A slot that displays "--" is empty. To the right of the NAME/SIZE column you can see what percentage of the DSP memory remains unused.

- **All sample speeds from 4 kHz to 48 kHz are accepted and handled by the Machinedrum UW. Higher rates are accepted but the samples are downsampled to half the sampling speed. The Machinedrum UW does not handle stereo samples. All bit depths are accepted but will be played back at 12 bit.**

- **To preview a sample, move the focus to the NAME/SIZE column and press [FUNCTION] + [ENTER/YES] when the sample you want to preview is higlighted. The previewed sample will be replayed using the track currently selected.**
- **The commands copy, clear, paste and undo are available in the sample manager. You can, for example, copy content from the RAM machines and paste it into the ROM slots. This is an easy way to permanently store a RAM machine recording.**
- **Note that you actually don't have to be in the SAMPLE MGR menu in order to receive samples. It is possible to send the samples to the Machinedrum UW at any time. Note that playback of the sequencer will be halted when transmitting samples.**
- **If you have a +Drive equipped Machinedrum you will see which Sample bank that's currently active. You can also see whether it is locked or not. If it is locked a small lock symbol will be displayed.**

THE DIFFERENCE BETWEEN ROM AND RAM MACHINES

The Machinedrum offers two types of machines for storing samples: ROM and RAM machines. The ROM machines keep the samples in memory even after the unit is switched off. When the unit is turned on the samples stored in the ROM machines will be loaded instantly.

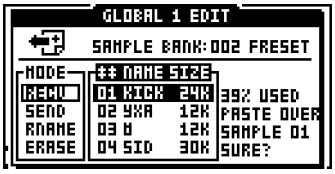
The RAM machines on the other hand function a bit different. Their content is erased every time the unit is switched off. You then have to fill them with sound data by either sampling the internal engine or sample from the external inputs. They are best used for real time sampling. Read about how they can be used in the "RAM MACHINES TUTORIAL" on page A-16, found in APPENDIX A.

RAM TO ROM COPY

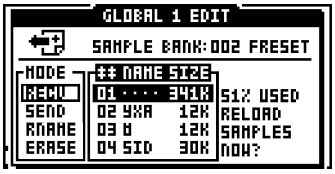
If you want to permanentely store the content of a RAM machine, you can copy it and paste it to a ROM machine.

1. While in the SAMPLE MANAGER menu, move the focus to the RAM machine whose content you wish to copy and then press **[FUNCTION]** + **[REC]**.
2. Choose the ROM slot you want to copy the RAM machine to and then press **[FUNCTION]** + **[STOP]**. Since you can't undo this operation you will be asked whether you

want to perform the action or not. Press **[ENTER/YES]** if you want to proceed with the copy operation.



3. A prompt will ask if you want to "RELOAD SAMPLES NOW?".

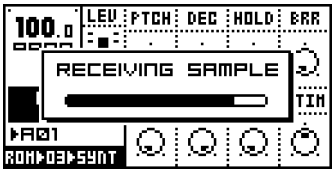


4. If you press the **[ENTER/YES]** button the content of all other RAM machines will be erased. If you want to copy the other RAM machines as well it is very important that you instead press the **[EXIT/NO]** key.
5. When you have copied all the RAM machines you can either press the **[ENTER/YES]** key when being asked if you want to reload the samples, or exit the SAMPLE MANAGER. In either way, all the RAM machines will be emptied.

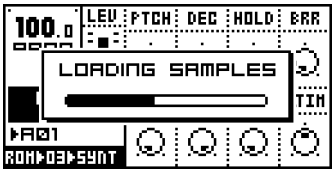
GENERAL SAMPLE RECEIVE

You don't have to be in SAMPLE MGR menu to receive samples. This is possible to do at any time and in any menu. This method of receiving samples functions exactly the same way as the ORG option described in "ORIGINAL PLACE SAMPLE RECEIVE" on page 74.

1. Connect the MIDI cables correctly to the Machinedrum UW. The MIDI OUT port on the MIDI interface should be connected to the MIDI IN port on the Machinedrum UW. If you want to use the closed loop transfer method, connect the MIDI OUT of the UW to the MIDI IN of the MIDI interface.
2. Load the samples you want to send to the Machinedrum into a suitable program, for example C6.
3. Send the samples. A message will appear saying "RECEIVING SAMPLE". The bar below the text shows the progress of each sent sample. Playback of the sequencer will be halted.



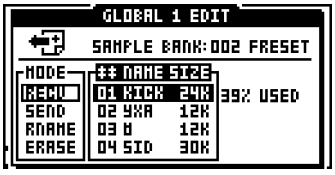
4. When the Machinedrum senses that no more samples are sent a new message may appear stating "CLEANING". When the cleaning is done the message "LOADING" will appear and the samples are transferred to the DSP system.



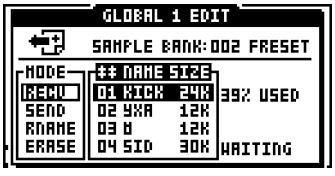
SPECIFIC PLACE SAMPLE RECEIVE

If you want to receive samples using the specific location method, please follow the instructions below.

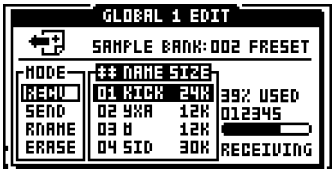
1. Connect the MIDI cables correctly to the Machinedrum UW. The MIDI OUT port on the MIDI interface should be connected to the MIDI IN port on the Machinedrum UW. If you want to use the closed loop transfer method, connect the MIDI OUT of the UW to the MIDI IN of the MIDI interface.
2. Load the samples you want to send to the Machinedrum into a suitable program, for example C6.
3. Select the FILE row in the GLOBAL EDIT menu. Then select SAMPLE MGR and press **[ENTER/YES]**.
4. Select RECEIVE by using the **[UP]** and **[DOWN]** keys. Once the RECEIVE option is highlighted, press the **[ENTER/YES]** button. The cursor will automatically jump to the NAME/SIZE window.



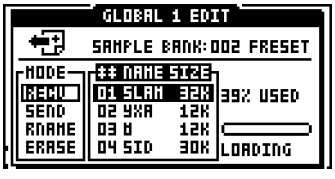
5. In the NAME/SIZE window, choose the slot where you want the Machinedrum to receive the sample by pressing the **[UP]** or the **[DOWN]** keys. Confirm by pressing **[ENTER/YES]**. A message saying “WAITING” will start to blink, indicating that the unit is ready to receive samples. Note that you can always cancel any operation by pressing the **[EXIT/NO]** button.



6. Send the samples from your program.
7. When the Machinedrum UW is receiving samples, a bar at the bottom of the screen will appear along with a message saying “RECEIVING”.



8. When the bar has been filled up the sample has been transferred. If there was a sample in the slot before the new one was transferred, a message saying “LOADING” will appear.



ORIGINAL PLACE SAMPLE RECEIVE

The Machinedrum UW can also receive several subsequent samples. To do this, either just send the samples at any time to the unit, as described under “GENERAL SAMPLE RECEIVE” on page 72, or choose the ORG option located at the bottom in the NAME/SIZE menu.

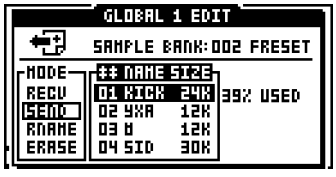
After receiving the first sample the Machinedrum UW checks if there are more samples coming. If so, the subsequent samples will be placed after the first one in the order they are received. Note that these subsequent samples will overwrite any samples that might be stored in these slots.

- **The MIDI Sample Dump Standard offers Sample Position to be included in the dump. This is handy to use with the ORG method, as you can select any ROM slot as the starting point for the sample transfer.**
- **The Machinedrum UW is always sysex device 0 when receiving data. Typically, you don’t have to bother about this.**
- **Use the Elektron TM-1 USB MIDI interface for up to 10x faster sample transfer speed.**
- **When receiving a sample using C6 1.4 or higher the file name of the sample can, depending on the settings in C6, be truncated to four charachters in the UW sample manager. OS 1.62 or higher needs to be installed for this feature to work.**

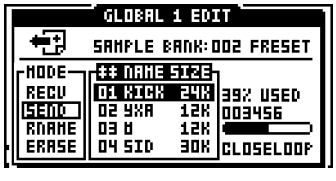
SEND SAMPLES

You can send samples from the Machinedrum UW to an external device, which will most likely be a computer. You can use our program C6 for this task as well.

1. Make sure you have conneced the MIDI cables correctly. The MIDI IN port on the MIDI interface should be connected to the MIDI OUT port on the Machinedrum UW. If you want to use the closed loop transfer method, connect the MIDI IN of the UW to the MIDI OUT of the MIDI interface.
2. Select the FILE row in the GLOBAL EDIT menu. Then select SAMPLE MGR and press **[ENTER/YES]**
3. Choose SEND in the MODE menu and press the **[ENTER/YES]** key. The cursor will automatically jump to the NAME/SIZE window.



4. Set the program you are using to receive the samples with to listen for incoming data.
5. Choose which sample you want to send by using the **[UP]** and **[DOWN]** arrow keys. Confirm the selection by pressing the **[ENTER/YES]** button. A bar will appear and when it has filled up the sample has been transmitted. You will also see whether a closed loop or an open loop transfer method is being used.

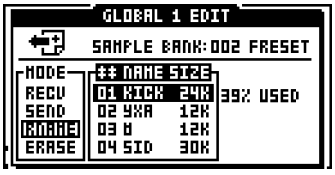


- **You can send every stored sample to make a complete sample dump. Scroll down in the NAME/SIZE window until you find the option that says ALL.**
- **You can also transmit samples stored in the RAM machines. Doing this you can sample sounds from the Machinedrum UW and store them externally.**
- **When sending a sample to a computer the position of the sample in the sample list will be stored in the syx-file. When the same sample is sent to the UW using the ORG method of receival it will then be stored in its original position. Note that this only affects syx files.**

RENAME SAMPLES

In OS 1.62 or higher you can give each ROM sample an individual name. Up to four characters can be used.

1. Select FILE in the GLOBAL EDIT menu. Then select SAMPLE MGR and press **[ENTER/YES]**.
2. Select RNAME by using the **[UP]** and **[DOWN]** arrows. Confirm the selection by pressing the **[ENTER/YES]** button.



3. Choose which sample you want to rename by using the **[UP]** and **[DOWN]** arrows and then press **[ENTER/YES]**. A window will appear where you can enter a name for the ROM sample.

4. Use the ***SOUND SELECTION*** wheel or the **[UP]** and **[DOWN]** keys to cycle through the letters. The **[LEFT]** and **[RIGHT]** keys move the cursor backwards and forwards on the line.

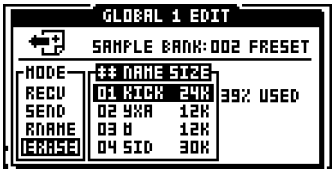
- **Pressing the [FUNCTION] key gives access to the “high score” selection method, in which you see all characters at the same time. Keep the [FUNCTION] key held while navigating using the [LEFT], [RIGHT], [UP] and [DOWN] buttons. Release the [FUNCTION] key when you have found the right letter.**

ERASE SAMPLES

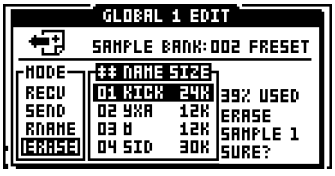
Every sample loaded into the UW can also be erased. Erasing samples frees up sample memory.

1. Select FILE in the GLOBAL EDIT menu. Then select SAMPLE MGR and press **[ENTER/YES]**.

2. Select ERASE by using the **[UP]** and **[DOWN]** arrows. Confirm the selection by pressing the **[ENTER/YES]** button.



3. Choose which sample you want to erase by using the **[UP]** and **[DOWN]** arrows and then press **[ENTER/YES]**. You will be prompted to confirm the removal of the sample. Press the **[ENTER/YES]** button again to erase the sample. If you do not want to erase it, press the **[EXIT/NO]** button.



- **You can erase all samples at once. Just choose the ALL option located at the bottom of the scroll list in the NAME/SIZE window.**

+DRIVE SETTINGS (+DRIVE UNITS ONLY)

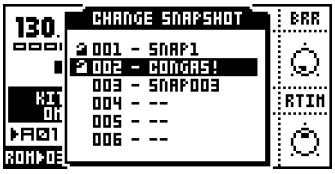
Here you select how quick loading a new Snapshot will affect the data of the Snapshot currently stored in the Battery Backed Memory. In this menu you can also format your +Drive. Read a brief overview of how +Drive data is handled in relation to the Battery Backed Memory in the section “+DRIVE FEATURES” on page 3.

1. Select the FILE row in the GLOBAL EDIT menu. Then select +DRIVE and press **[ENTER/YES]**.

QUICK MODE decides the behavior of the QUICK MODE menu. The setting is truly global and will not be changed when changing Snapshots. The QUICK MODE menu allows you to load Snapshots more efficiently. Access the QUICK MODE menu by holding down **[FUNCTION]** while pressing the **[PATTERN/SONG]** key. First the GLOBAL menu will be accessed, but after a short while the QUICK MODE menu will appear. All locked Snapshots are indicated by a lock symbol. A similar mode is available for Sample banks as well. See page 79 for more information.

CHANGE will save all pattern, kit, song, mute settings and global data of the Battery Backed Memory to the Snapshot +Drive location it was loaded from before a new Snapshot

is loaded. If this option is chosen, the QUICK MODE menu will be titled CHANGE SNAPSHOT.



LOAD means that all pattern, kit, song, mute settings and global data of the Snapshot loaded to the Battery Backed Memory will be overwritten when a new Snapshot is loaded. If this option is chosen, the QUICK MODE menu will be titled LOAD SNAPSHOT.

FORMAT DRIVE erases everything on the +Drive. If you want to format the +Drive press the **[ENTER/YES]** key. A prompt will appear. Press **[ENTER/YES]** to format the +Drive. Press **[EXIT/NO]** to cancel the operation.

- **Note that formatting the +Drive will not erase the Snapshot loaded in the Battery Backed Memory. However, any samples in the Sample bank loaded in the DSP will be cleared immediately.**

- **At the bottom of the +DRIVE SETTINGS menu you will see how many Snapshots and Sample banks your unit contains.**
- **The NEGOTIATE setting in the TURBO menu will just like the QUICK MODE setting stay the same no matter which Snapshot that is loaded.**
- **If a Snapshot is locked it will always behave as if the QUICK MODE setting was set to LOAD.**

SNAPSHOT MANAGER (+DRIVE UNITS ONLY)

In this menu you can load, save, rename, erase, lock and unlock Snapshots.

1. Select the FILE row in the GLOBAL EDIT menu. Then select SNAPSHOTS and press **[ENTER/YES]**.

In the MODE column you select which action you want to perform.

LOAD will load one of the 128 available Snapshots.

SAVE will save the content in the Battery Backed Memory to one of the 128 Snapshot locations.

RENAME makes it possible to rename Snapshots. A Snapshot name can contain a maximum of 8 characters.

ERASE will erase the selected Snapshot from the +Drive.

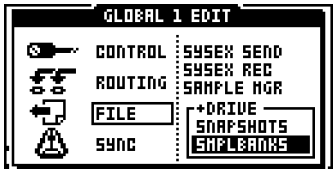
LOCK will lock the Snapshot. When a Snapshot is locked it is not possible to overwrite, rename or erase it. If QUICK MODE in the +DRIVE menu is set to **CHANGE** the locked Snapshot will disregard this and instead function as if QUICK MODE was set to **LOAD**. Hence no altered pattern, kit, song, mute settings or global data will be saved when changing Snapshots. A locked Snapshot is indicated by a lock symbol in the lower right side of the menu window.

UNLOCK reverts a locked Snapshot to the default, unlocked, status.

- **Copy/Clear/Paste commands are available in the SNAPSHOT MANAGER menu. Warning! No Undo command is available in this menu.**
- **It's possible to lock or unlock a Snapshot regardless the selected MODE alternative. Highlight the Snapshot with the cursor and press [FUNCTION] + [ENTER/YES] to lock it. By pressing [FUNCTION] + [ENTER/YES] a locked Snapshot will be unlocked.**
- **For faster scrolling in the list, hold down the [FUNCTION] button and press the [UP]/[DOWN] arrow keys.**
- **With a +Drive you can assign unique audio output routings to your Snapshots thanks to each Snapshot having its own 8 Global slots. A Snapshot also remembers your mute settings and if your unit is in song or pattern mode.**
- **To the right, under the camera icon, you can see which Sample bank that is linked to the Snapshot. If you switch Sample banks the new Sample bank assignment will not be graphically updated until the Snapshot is saved. The changes will be reflected immediately in the SAMPLE MANAGER menu though.**

SAMPLE BANK MANAGER (UW +DRIVE UNITS ONLY)

In the SAMPLE BANK MANAGER menu you can switch, rename, erase, lock and unlock Sample banks.



1. Select the FILE row in the GLOBAL EDIT menu. Then select SMPLBANKS and press **[ENTER/YES]**.

In the MODE column you select which action you want to perform.

SELECT allows you to load to another Sample bank. It is possible to load a Sample bank even when not in this menu. Keep the **[FUNCTION]** and **[KIT]** keys depressed. First the SONG menu will appear, but after a short while it will change into the SELECT SAMPLE BANK menu. Here you can choose the Sample bank you want to load.

RENAME will rename the selected Sample bank. A Sample bank name can contain a maximum of 8 characters.

ERASE will erase the selected Sample bank.

LOCK will lock the Sample bank. When a Sample bank is locked it is not possible to overwrite, rename or erase it. Samples in the bank are protected and can't be overwritten or renamed. A locked Sample bank is indicated by a lock symbol in the lower right side of the menu window.

UNLOCK reverts a locked Sample bank to the default, unlocked, status.

- **Open the quick Sample bank selection menu by long pressing the [FUNCTION] + [KIT] buttons.**
- **Copy/Clear/Paste commands are available in the SAMPLE BANK MANAGER menu. Warning! No Undo command is available in this menu.**
- **It's possible to lock or unlock a Sample bank regardless the selected MODE alternative. Highlight the Sample bank with the cursor and press [FUNCTION] + [ENTER/YES] to lock it. By pressing [FUNCTION] + [ENTER/YES] a locked Sample bank will be unlocked.**
- **For faster scrolling in the Sample bank list, hold down the [FUNCTION] button and press the [UP]/[DOWN] arrow keys.**
- **It's possible to copy samples between Sample banks. Open the SAMPLE MGR in the FILE menu. Select the sample you want to copy and press [FUNCTION] + [REC] to copy it. Load a new Sample bank. Enter the SAMPLE MGR, select the position to which you want to paste the sample. Press [FUNCTION] + [STOP] to paste the sample. No undo function is available here.**

SYNC

The Machinedrum can be synchronized to either internal or external MIDI clock. It can also be configured to react to and transmit different kinds of control messages which is useful in a studio environment where the Machinedrum is synchronized to other MIDI devices.

TEMPO IN

The Machinedrum can either follow its internal clock or follow the tempo of an external source.

1. Select the SYNC row in the GLOBAL EDIT menu. Then select TEMPO IN and press **[ENTER/YES]**.

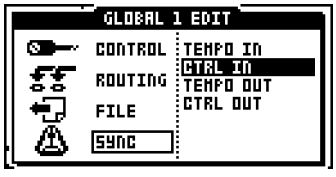
INTERNAL means the Machinedrum listens to its own BPM. Note that the internal clock of the Machinedrum is extremely precise. If you are unsure about the timing of the incoming signal, we recommend that you leave the TEMPO IN setting set to INTERNAL.

EXTERNAL will sync the Machinedrum to incoming tempo via MIDI. When locked to external clock signal, the BPM will display “EXT”. If the Machinedrum does not receive a clock signal for a couple of seconds, it will revert back to following its own internal clock.

- **When the Machinedrum is synced to an external clock signal and no longer detects it, it will fall back to its internal clock. In this situation, the sync source in the global settings will not change. Once the Machinedrum begins to receive an external clock signal again, it will synchronize to that signal.**

CTRL IN

Here you decide how the Machinedrum should react to incoming MIDI control data.



1. Select the SYNC row in the GLOBAL EDIT menu. Then select CTRL IN and press **[ENTER/YES]**.

ON will make the Machinedrum respond to MIDI start, stop and continue messages. Use this setting if you want to control the playback of the Machinedrum from an external sequencer.

OFF makes the Machinedrum ignore MIDI start, stop and continue messages. With this setting the Machinedrum can have its tempo synchronized to an external source without having to stop the pattern currently playing if “stop” is pressed on the external sequencer. This is practical if you want to use the Machinedrum as a sound module and still have the LFO’s and the Rhythm Echo tempo synchronized.

TEMPO OUT

The Machinedrum can be set to send out tempo information.

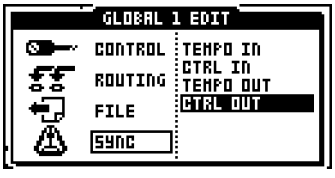
1. Select the SYNC row in the GLOBAL EDIT menu. Then select TEMPO OUT and press **[ENTER/YES]**.

ON will make the Machinedrum send out MIDI clock. Select this option If you are going to tempo sync other devices to your Machinedrum.

OFF means no MIDI clock is sent out from the Machinedrum.

CTRL OUT

The Machinedrum can be set to send out MIDI control data.



1. Select the SYNC row in the GLOBAL EDIT menu. Then select CTRL OUT and press **[ENTER/YES]**.

ON will make the Machinedrum send out MIDI start, stop and continue messages. Use this setting if you want to control and external sequencer with the Machinedrum. Pressing the **[PLAY]** key on the Machinedrum will then start the external sequencer, pressing the **[STOP]** key will stop the external sequencer and so on.

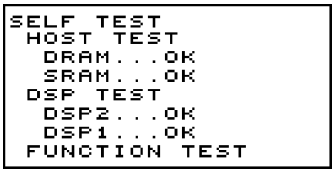
OFF means no MIDI start, stop and continue messages will be sent from the Machinedrum.

EARLY STARTUP MENU

To access this menu, hold down the **[FUNCTION]** key while powering up the Machinedrum. From here you can perform a variety of maintenance tasks. To choose the different alternatives, press the corresponding **[TRIG]** key.

TEST MODE

To enter this mode, press the first **[TRIG]** key. If you have any trouble with your Machinedrum and suspect it may be due to a hardware problem, perform this self test. Everything should come up as shown below. If not, contact Elektron support.



Here you can also check that every button and knob work as intended. Press the buttons and turn the knobs and the <SOUND SELECTION> LEDs should light up. If something does not work as supposed, please contact Elektron Support.

EMPTY RESET

To perform this operation, press the second **[TRIG]** key. This reset will clear all kits, patterns, songs and global settings. If you have a Machinedrum UW, an empty reset will still retain the ROM samples in memory.

For +Drive equipped units, an empty reset will clear all kits, patterns, songs and global settings of the Battery backed memory. No samples will be erased.

FACTORY RESET

To perform this operation, press the third **[TRIG]** key. This reset restores all patterns, kits, songs and globals to the factory presets that was preinstalled when the Machinedrum originally shipped. For the Machinedrum UW, all ROM samples will also be reverted to the factory defaults.

For +Drive equipped units the Battery Backed Memory will be replaced by factory patterns, kits, songs and global settings. The first Sample bank will be replaced with factory samples, given you have a UW version of the Machinedrum. The first Snapshot will be replaced with factory patterns, kits, songs and global settings. No other Snapshots or Sample banks on the +Drive will be affected.

SOFT RESET

To perform this operation, press the fourth **[TRIG]** key. This is a milder form of reset which will retain all data inside your Machinedrum. After a SOFT RESET no ROM samples will be loaded for the Machinedrum UW. This might fix potential sample-related problems in the sample manager.

MIDI UPGRADE

By choosing this option, the Machinedrum prepares itself to receive an OS upgrade via MIDI.

1. Check that all MIDI cables are connected correctly.
2. Load the new OS in an appropriate program capable of sending sysex files. We recommend the program C6 which can be found on the Elektron website. You can also use another Machinedrum with a more up to date OS. Connect it to the Machinedrum that is supposed to be upgraded, and transmit the OS. Read more about this procedure in the “SEND UPGRADE“ section.
3. Choose MIDI UPGRADE by pressing the fifth **[TRIG]** key. The Machinedrum will wait for an OS to be transmitted to it and a message stating “READY TO RECEIVE MIDI UPGRADE…” will appear on the screen.

4. Once the Machinedrum senses that an OS is being sent to it, the <SOUND SELECTION> and the <TRIG> LEDs will light up one after another. Please note that this procedure takes a while.
5. When the transfer is finished the message “PREPARING FLASH” appears.

6. “PREPARING FLASH” is shortly followed by “UPDATING FLASH”. When this process is finished the OS is updated. After the upgrade the operating system may upgrade the bootstrap, **do not turn off the unit** before it has completed its start up sequence or explicitely tells you to restart!

SEND UPGRADE

With this option you can send the OS installed in your Machinedrum to a friend's unit.

1. Connect the MIDI OUT on the Machinedrum with the latest OS to the MIDI IN on the Machinedrum that is going to be upgraded. Enter the EARLY STARTUP menus on both machines.
2. Enter the MIDI UPGRADE mode in the Machinedrum that is supposed to be upgraded by pressing the fifth **[TRIG KEY]**. Make sure you see the message "READY TO RECEIVE MIDI UPGRADE…" on the screen.
3. Press the sixth **[TRIG]** key of the Machinedrum that is used to send the OS upgrade. This will start the transmission of the OS to the other Machinedrum.

- **If you have installed OS 1.31 or above you can experience the speed of the Elektron TurboCharge protocol. You will need to have the MIDI IN port of the receiving machine connected to the MIDI OUT port of the transmitting machine and vice versa for this to function.**

TECHNICAL INFORMATION

SPECIFICATIONS

PERCUSSION CONTROL SEQUENCER

16 tracks
128 x 64 step patterns
32 songs
4096 songs (+Drive models only)
Supports swing, slide and accent
64 possible parameter locks on each pattern step
Full realtime control
Full MIDI support
384 MIDI controllable (MIDI CC) parameters

SOUND GENERATION SYSTEM

4 MD Synths
46 individual audio generating machines
5 effects on each track
4 stereo master effects
16 part synthesis
64 kits
8192 kits (+Drive models only)

SPS-1UW MKI ONLY

32 ROM slots
4096 ROM slots (+Drive models only)
2 RAM machines for real time sampling

SPS-1UW MKII ONLY

48 ROM slots
6144 ROM slots (+Drive models only)
4 RAM machines for real time sampling

TRACK EFFECTS

Amplitude modulation
1-Band EQ
Resonant 24dB lp/bp/hp filter
Sample rate reduction
Distortion

MASTER EFFECTS

Rhythm Echo delay
Gatebox reverb
Hi/Lo-shelf + parametric EQ
Dynamix processor

ELECTRICAL SPECIFICATIONS

Impedance balanced audio outputs:

Main out level: +15dBu
Assignable outs level: +10dBu

Output impedance: 100 Ω unbalanced

S/N ratio: 100dBFS (20-20.000Hz)

Unbalanced audio inputs:

Input level: +7dBu maximum

Audio input impedance: 9 kΩ

SNR inputs: 98dBFS (20-20.000Hz)

Unit power consumption: 10W typical, 18W maximum.

Recommended power supply: 6V DC, 3A

HARDWARE

128x64 pixel backlit LCD
MIDI In/Out/Thru
6 x 1/4" impedance balanced audio out jacks
2 x 1/4" audio in jacks
1 x 1/4" stereo headphone jack
Advanced dual DSP system
44.1kHz, 24-bit D/A and A/D converters
Flash-EEPROM upgradable OS
2,0 Mb sample memory (UW MKI models only)
2,5 Mb sample memory (UW MKII models only)
+Drive (+Drive equipped models only)

PHYSICAL SPECIFICATIONS

Steel casing with brushed aluminium panel
Dimensions: W340xD176xH63mm
(height including knobs and rubber feet)
Weight: approximately 2.8 kg

POWER SUPPLY (PSU-2) ELECTRICAL SPECIFICATIONS

Input voltage range: 100-240V (43-60Hz)
Input connector: IEC320-C8 (2 prong)
In-rush current: 50A maximum

Output voltage: 5.7-6.3V DC
Output current: 3.5A maximum
Output connector: 5.5x2.5mm DC plug, power at center

DIFFERENCES BETWEEN THE MKI AND MKII MODELS

There exist a number of hardware differences between the MKI and MKII models of the Machinedrum. Below is a compilation of the most important changes.

DESIGN

The height of the Machinedrum MKII is 63mm including rubber feet and knobs.

The height of a MKI unit including rubber feet and knobs is 77mm.

POWER SUPPLY

A switched-mode power supply is used for the MKII models which allow the units to be used all over the globe without the need of voltage converters. The MKI models use an AC power supply.

The output specification of the MKI power supply is: 6V AC, 2.5A, 50/60Hz. The plug size of the MKI supply is the same as a MKII power supply.

S/N RATIO AND OUTPUTS

The S/N ratio of the outputs on the Machinedrum MKII is 100dB. The outputs of the MKII units are impedance balanced.

The S/N ratio for a MKI unit outputs is 91dB and the outputs are unbalanced.

SAMPLER SPECIFICATIONS (UW MODELS ONLY)

The MKII has 48 ROM slots, 4 RAM machines and 2.5MB of sampling memory.

The MKI has 32 ROM slots, 2 RAM machines and 2.0MB of sampling memory.

PATTERN LENGTH

The pattern length of the MKII units can be up to 64 steps.

The MKI can have patterns containing a maximum of 32 steps.

CREDITS

PRODUCT DESIGN AND DEVELOPMENT

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Anders Gärder
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Jimmy Myhrman
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ADDITIONAL DESIGN

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Jesper Kouthoofd
Erik Larsson
Charlie Storm
Fredrik Åhfeldt

FACTORY DEFAULT SOUND DESIGN

Daniel Troberg

USER'S MANUAL

Thomas Ekelund
Daniel Hansson
Jon Mårtensson

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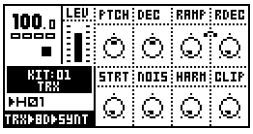
Appendix A: MACHINE REFERENCE

In this appendix, the MD-synths and their machines will be introduced. The individual machine parameters are presented for reference.

TRX

TRX is inspired by classic analogue drum machine synthesis. With TRX we have not tried to recreate any specific existing drum machine, but to create a classic sound with extended and relevant controls.

BASS DRUM "TRX-BD"



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

RAMP - Ramps the pitch.

RDEC - Speed of pitch ramp.

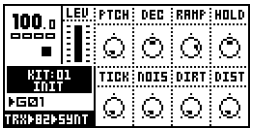
STRT - Makes the start harder.

NOIS - Adds noise to the start of the sound.

HARM - Adds extra harmonics.

CLIP - A special type of distortion.

BASS DRUM "TRX-B2"



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

RAMP - Ramps the pitch.

HOLD - Controls the initial hold time for the volume.

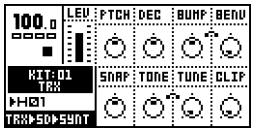
TICK - Adds a tick to make the start harder.

NOIS - Adds noise to the start of the sound.

DIRT - Controls a bit reduction function for the bassdrum.

DIST - A special type of distortion.

SNARE DRUM "TRX-SD"



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

BUMP - Adds a pitch shift at the start.

BENV - Controls the envelope of the bump.

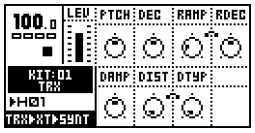
SNAP - Amount of snap.

TONE - Changes tonal quality.

TUNE - Detunes the drum.

CLIP - A special type of distortion.

TOM "TRX-XT"



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

RAMP - Ramps the pitch.

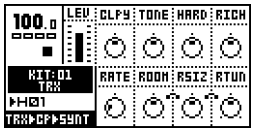
RDEC - Speed of pitch ramp.

DAMP - Dampens the decay.

DIST - Distortion.

DTYP - Hardness of the distortion.

CLAP "TRX-CP"



CLPY - Density of the clap.

TONE - Changes tonal quality.

HARD - Harder claps.

RICH - Enhances the richness of the sound.

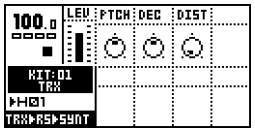
RATE - Rate of the individual claps.

ROOM - Adds a room sound.

RSIZ - Changes the size of the room.

RTUN - Changes the tonal quality of the room.

RIM SHOT "TRX-RS"

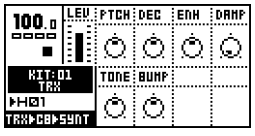


PTCH - Controls the basic pitch.

DEC - Controls the decay time.

DIST - Distortion.

COW BELL "TRX-CB"



PTCH - Controls the basic pitch.

DEC - Controls the decay time.

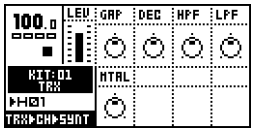
ENH - Enhances the body of the sound.

DAMP - Dampens the decay part.

TONE - Changes tonal quality.

BUMP - Adds a pitchshift at the start of the sound.

CLOSED HIHAT "TRX-CH"



GAP - Changes the hi-hat gap.

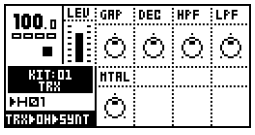
DEC - Controls the decay time.

HPF - High pass filters the sound.

LPF - Low pass filters the sound.

MTAL - Adds extra metal character to the sound.

OPEN HIHAT "TRX-OH"



GAP - Changes the hi-hat gap.

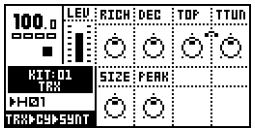
DEC - Controls the decay time.

HPF - High pass filters the sound.

LPF - Low pass filters the sound.

MTAL - Adds extra metal character to the sound.

CYMBAL "TRX-CY"



RICH - Adds extra richness to the sound.

DEC - Controls the decay time.

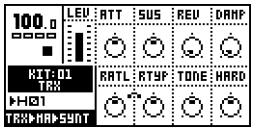
TOP - Amount of high frequency harmonics.

TTUN - Tunes the top.

SIZE - Changes the size of the cymbal.

PEAK - Gives the sound more edge.

MARACAS "TRX-MA"



ATT - Length of the attack.

SUS - Length of the sustain.

REV - Reverses movement of the maracas.

DAMP - Dampens the sound to make it more sparse.

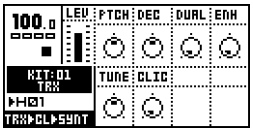
RATL - Adds extra rattle to the sound.

RTYP - Type of rattle.

TONE - Changes tonal quality.

HARD - Gives the sound a harder character.

CLAVES “TRX-CL”



PTCH - Controls the basic pitch.

DEC - Controls the decay time.

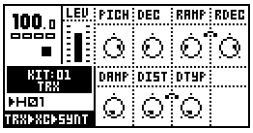
DUAL - Introduces a dual attack.

ENH - Enhances the tone.

TUNE - Detunes the sound.

CLIC - Adds a click at the start.

CONGAS “TRX-XC”



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

RAMP - Ramps the pitch.

RDEC - Speed of the pitch ramp.

DAMP - Dampens the decay part of the sound.

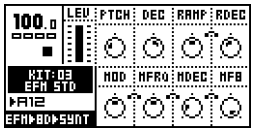
DIST - Distortion.

DTYP - Hardness of the distortion.

EFM

The EFM MD-synth introduces Elektron's "Enhanced Feedback Modulation" algorithms. The generated sound ranges from realistic acoustic drums to wild, chaotic effects.

BASS DRUM "EFM-BD"



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

RAMP - The pitch ramp depth.

RDEC - The pitch ramp decay time. A higher value gives a longer decay.

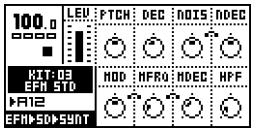
MOD - The frequency modulation depth.

MFRQ - The modulation frequency.

MDEC - The modulation decay time.

MFB - Modulation feedback.

SNARE DRUM "EFM-SD"



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

NOISE - The amount of noise in the snare drum.

NDEC - Noise decay time.

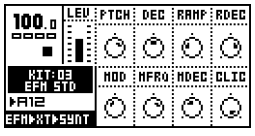
MOD - The frequency modulation depth.

MFRQ - The modulation frequency.

MDEC - The modulation decay time.

HPF - High pass filter frequency.

TOM "EFM-XT"



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

RAMP - The pitch ramp depth.

RDEC - The pitch ramp decay time. A higher value gives a longer decay.

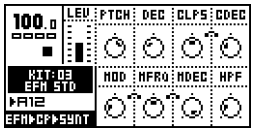
MOD - The frequency modulation depth.

MFRQ - The modulation frequency.

MDEC - The modulation decay time.

CLIC - Adds a click to the start of the drum.

CLAP "EFM-CP"



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

CLPS - The number of claps.

CDEC - The clap decay time. A higher value gives a longer decay.

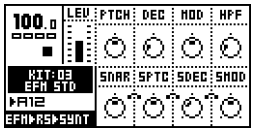
MOD - The frequency modulation depth.

MFRQ - The modulation frequency.

MDEC - The modulation decay time.

HPF - High pass filter frequency.

RIMSHOT "EFM-RS"



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

MOD - The frequency modulation depth.

HPF - High pass filter frequency.

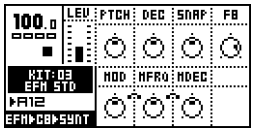
SNAR - Adds snare drum timbre to the sound.

SPTC - The pitch of the snare drum timbre.

SDEC - The decay of the snare drum timbre.

SMOD - The modulation depth of the snare drum timbre.

COWBELL "EFM-CB"



PTCH - Controls the basic pitch.

DEC - Controls the decay time.

SNAP - The amount of snap in the beginning of the sound.

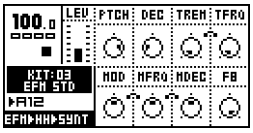
FB - Feedback amount.

MOD - The frequency modulation depth.

MFRQ - The modulation frequency.

MDEC - The modulation decay time.

HIHAT “EFM-HH”



PTCH - Controls the basic pitch of the hihat.

DEC - Controls the decay time.

TREM - Depth of the added tremolo.

TFRQ - Frequency of the tremolo.

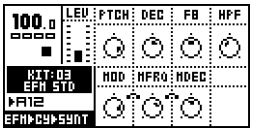
MOD - The frequency modulation depth.

MFRQ - The modulation frequency.

MDEC - The modulation decay time.

FB - Feedback amount.

CYMBAL “EFM-CY”



PTCH - Controls the basic pitch of the cymbal.

DEC - Controls the decay time.

FB - Feedback amount.

HPF - High pass filter frequency.

MOD - The frequency modulation depth.

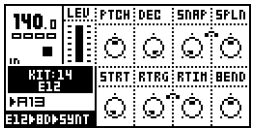
MFRQ - The modulation frequency.

MDEC - The modulation decay time.

E12

E12 is built on carefully processed sampled percussion sounds with individual control.

BASS DRUM “E12-BD”



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

SNAP - Depth of the snap. Introduces a more harsh attack.

SPLEN - Length of the snap.

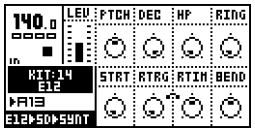
START - Moves the start point of the drum forward.

RTRG - Number of drum retrigs.

RTIM - The time between each retrig. The time is relative to the tempo.

BEND - Pitch bend depth. Bends the pitch of the drum up or down into the basic pitch.

SNARE DRUM “E12-SD”



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

HP - High pass filter frequency.

RING - Introduces ringing overtones to the sound.

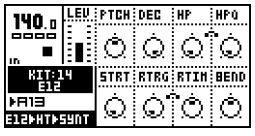
STRT - Moves the start point of the drum forward.

RTRG - Number of drum retrigs.

RTIM - The time between each retrig. The time is relative to the tempo.

BEND - Pitch bend depth. Bends the pitch of the drum up or down into the basic pitch.

HIGH TOM “E12-HT”



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

HP - High pass filter frequency.

HPQ - High pass filter “Q“ value.

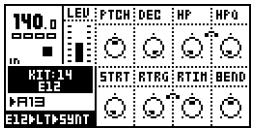
STRT - Moves the start point of the drum forward.

RTRG - Number of drum retrigs.

RTIM - The time between each retrig. The time is relative to the tempo.

BEND - Pitch bend depth. Bends the pitch of the drum up or down into the basic pitch.

LOW TOM “E12-LT”



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

HP - High pass filter frequency.

HPQ - High pass filter “Q“ value.

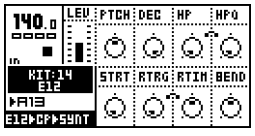
STRT - Moves the start point of the drum forward.

RTRG - Number of drum retrigs.

RTIM - The time between each retrig. The time is relative to the tempo.

BEND - Pitch bend depth. Bends the pitch of the drum up or down into the basic pitch.

CLAP “E12-CP”



PTCH - Controls the basic pitch of the clap.

DEC - Controls the decay time.

HP - High pass filter frequency.

HPQ - High pass filter “Q“ value.

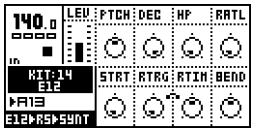
STRT - Moves the start point of the drum forward.

RTRG - Number of drum retrigs.

RTIM - The time between each retrig. The time is relative to the tempo.

BEND - Pitch bend depth. Bends the pitch of the drum up or down into the basic pitch.

RIMSHOT “E12-RS”



PTCH - Controls the basic pitch.

DEC - Controls the decay time.

HP - High pass filter frequency.

RRTL - Adds “ringing” to the sound.

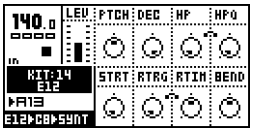
STRT - Moves the start point of the drum forward.

RTRG - Number of drum retrigs.

RTIM - The time between each retrig. The time is relative to the tempo.

BEND - Pitch bend depth. Bends the pitch of the drum up or down into the basic pitch.

COW BELL “E12-CB”



PTCH - Controls the basic pitch.

DEC - Controls the decay time.

HP - High pass filter frequency.

HPQ - High pass filter “Q“ value.

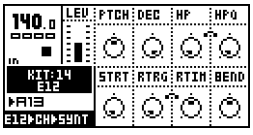
STRT - Moves the start point of the drum forward.

RTRG - Number of drum retrigs.

RTIM - The time between each retrig. The time is relative to the tempo.

BEND - Pitch bend depth. Bends the pitch of the drum up or down into the basic pitch.

CLOSED HIHAT “E12-CH”



PTCH - Controls the basic pitch of the hihat.

DEC - Controls the decay time.

HP - High pass filter frequency.

HPQ - High pass filter “Q“ value.

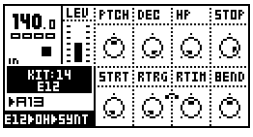
STRT - Moves the start point of the drum forward.

RTRG - Number of drum retrigs.

RTIM - The time between each retrig. The time is relative to the tempo.

BEND - Pitch bend depth. Bends the pitch of the drum up or down into the basic pitch.

OPEN HIHAT “E12-OH”



PTCH - Controls the basic pitch of the cymbal.

DEC - Controls the decay time.

HP - High pass filter frequency.

STOP - Sets the length of the sound until it gets stopped abruptly.

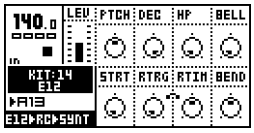
STRT - Moves the start point of the drum forward.

RTRG - Number of drum retrigs.

RTIM - The time between each retrig. The time is relative to the tempo.

BEND - Pitch bend depth. Bends the pitch of the drum up or down into the basic pitch.

RIDE CYMBAL “E12-RC”



PTCH - Controls the basic pitch of the cymbal.

DEC - Controls the decay time.

HP - High pass filter frequency.

BELL - Introduces the sound from the inner bell of a ride cymbal.

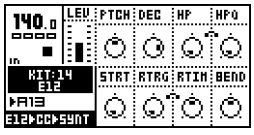
STRT - Moves the start point of the drum forward.

RTRG - Number of drum retrigs.

RTIM - The time between each retrig. The time is relative to the tempo.

BEND - Pitch bend depth. Bends the pitch of the drum up or down into the basic pitch.

CRASH CYMBAL “E12-CC”



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

HP - High pass filter frequency.

HPQ - High pass filter “Q“ value.

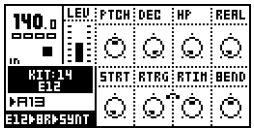
STRT - Moves the start point of the drum forward.

RTRG - Number of drum retrigs.

RTIM - The time between each retrig. The time is relative to the tempo.

BEND - Pitch bend depth. Bends the pitch of the drum up or down into the basic pitch.

BRUSHED SNARE “E12-BR”



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

HP - High pass filter frequency.

REAL - Enhances the effect of the brush.

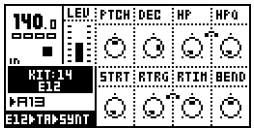
STRT - Moves the start point of the drum forward.

RTRG - Number of drum retrigs.

RTIM - The time between each retrig. The time is relative to the tempo.

BEND - Pitch bend depth. Bends the pitch of the drum up or down into the basic pitch.

TAMBOURINE “E12-TA”



PTCH - Controls the basic pitch of the tambourine.

DEC - Controls the decay time.

HP - High pass filter frequency.

HPQ - High pass filter “Q“ value.

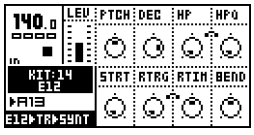
STRT - Moves the start point of the drum forward.

RTRG - Number of drum retrigs.

RTIM - The time between each retrig. The time is relative to the tempo.

BEND - Pitch bend depth. Bends the pitch of the drum up or down into the basic pitch.

TRIANGLE “E12-TR”



PTCH - Controls the basic pitch of the triangle.

DEC - Controls the decay time.

HP - High pass filter frequency.

HPQ - High pass filter “Q“ value.

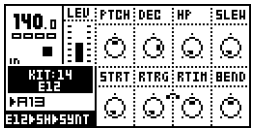
STRT - Moves the start point of the drum forward.

RTRG - Number of drum retrigs.

RTIM - The time between each retrig. The time is relative to the tempo.

BEND - Pitch bend depth. Bends the pitch of the drum up or down into the basic pitch.

SHAKER “E12-SH”



PTCH - Controls the basic pitch of the shaker.

DEC - Controls the decay time.

HP - High pass filter frequency.

SLEW - Controls the effect of shaking back and forth.

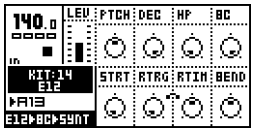
STRT - Moves the start point of the drum forward.

RTRG - Number of drum retrigs.

RTIM - The time between each retrig. The time is relative to the tempo.

BEND - Pitch bend depth. Bends the pitch of the drum up or down into the basic pitch.

BONGO CONGO “E12-BC”



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

HP - High pass filter frequency.

BC - Varies the sound between a bongo and congo drum.

STRT - Moves the start point of the drum forward.

RTRG - Number of drum retrigs.

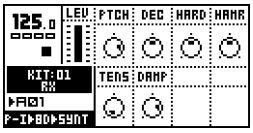
RTIM - The time between each retrig. The time is relative to the tempo.

BEND - Pitch bend depth. Bends the pitch of the drum up or down into the basic pitch.

P-I

P-I is the physically informed MD-synth which simulates the behaviour of acoustic drums.

BASS DRUM “PI-BD”



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

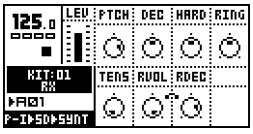
HARD - A higher value gives a harder strike.

HAMR - A higher value gives a softer mallet.

TENS - Regulates the effect of the high tension in the skin from a hard hit.

DAMP - Regulates the damping in the drum body.

SNARE DRUM “PI-SD”



PTCH - Controls the basic pitch of the drum.

DEC - Controls the decay time.

HARD - A higher value gives a harder strike.

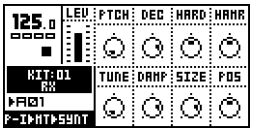
TENS - Regulates the effect of the high tension in the skin from a hard hit.

RVOL - The volume of the snares’ rattling.

RDEC - The decay time of the rattling.

RING - The drum’s metallic ringing.

TOM “PI-XT”



PTCH - Controls the basic pitch of the drum.

DEC - Sets the decay time of the drum.

HARD - A higher value gives a harder strike.

HAMR - A higher value gives a softer mallet.

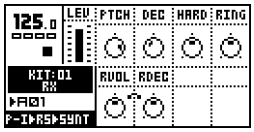
TUNE - Emulates different tuning of skins.

DAMP - Regulates damping in the drum body.

SIZE - Regulates the size of the drum body.

POS - Moves the striking point from the center to the edge.

RIMSHOT “PI-RS”



PTCH - Controls the basic pitch of the rim shot.

DEC - Controls the decay time.

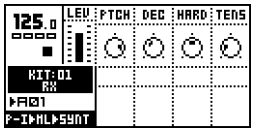
HARD - A higher value gives a harder strike.

RING - The drum’s metallic ringing.

RVOL - The volume of the snares’ rattling.

RDEC - The decay time of the rattling.

METALLICA “PI-ML”



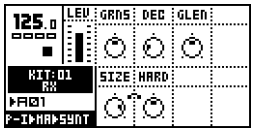
PTCH - Controls the basic pitch of the sound.

DEC - Controls the decay time.

HARD - A higher value gives a harder strike.

TENS - Regulates the effect of a hard hit.

MARACAS “PI-MA”



DEC - Sets the decay time of the maraca.

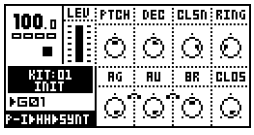
GRNS - Adjusts the number of grains in the maraca.

GLEN - Adjusts the decay time for the individual grains.

SIZE - Regulates the size of the maraca.

HARD - Regulates the hardness of the grains.

HI HAT “PI-HH”



PTCH - Controls the basic pitch of the hi hat.

DEC - Sets the decay time of the hi hat.

CLSN - Simulates slight contact between the two cymbals of the hihats.

RING - Controls the amount of ringing in the sound.

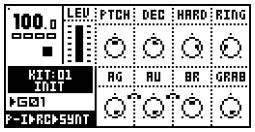
AG - Enhances the high frequencies of the sound.

AU - Decreases the high frequencies of the sound.

BR - Controls the low frequences of the sound.

CLOS - Sets the time to closing the hi hat. A value of 127 means that that the hi hat does not close.

RIDE CYMBAL “PI-RC”



PTCH - Controls the basic pitch of the ride.

DEC - Sets the decay time of the ride.

HARD - Adds the impression of a hard hit.

RING - Controls the amount of ringing in the sound.

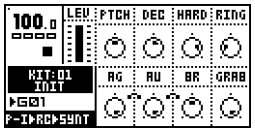
AG - Enhances the high frequencies of the sound.

AU - Decreases the high frequencies of the sound.

BR - Controls the low frequences of the sound.

GRAB - Sets the time to grabbing the cymbal. A value of 127 means that that the cymbal is never grabbed.

CRASH CYMBAL “PI-CC”



PTCH - Controls the basic pitch of the crash.

DEC - Sets the decay time of the crash.

HARD - Adds the impression of a hard hit.

RING - Controls the amount of ringing in the sound.

AG - Enhances the high frequencies of the sound.

AU - Decreases the high frequencies of the sound.

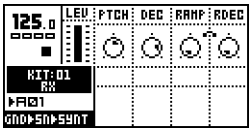
BR - Controls the low frequences of the sound.

GRAB - Sets the time to grabbing the cymbal. A value of 127 means that that the cymbal is never grabbed.

GND

GND is not really an MD-synth. It contains some miscellaneous machines that can be used for adding extra tonality, and an “empty” machine called “---”.

SINUS “GND-SN”



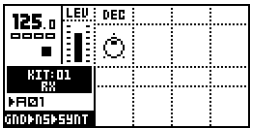
PTCH - Controls the basic pitch.

DEC - The decay time. A higher value gives a longer decay.

RAMP - The pitch ramp.

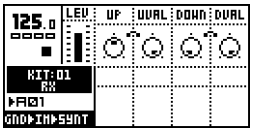
RDEC - The pitch ramp decay.

NOISE “GND-NS”



DEC - The decay time. A higher value gives a longer decay.

IMPULSE “GND-IM”



UP - The time that the impulse stays positive.

UVAL - The value of the positive phase.

DOWN - The time that the impulse stays negative.

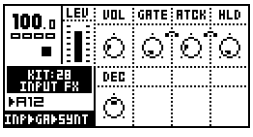
DVAL - The value of the negative phase.

INP

The INP synth contains the machines that effect the two external inputs of the Machine-drum.

INPUT GATE A/B “INP-GA/B”

This is a gate for the A and B inputs. It is made for passing through external audio. It does not react to trigs, other than you need to trig it once for it to become active.



VOL - Controls the input volume.

GATE - The input gate sensitivity. A low value lets lower signals through the gate.

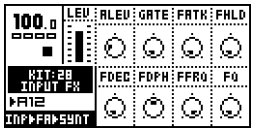
ATCK - The input gate attack time. A high value makes the gate open more slowly.

HLD - The input gate hold time. This parameter controls how long the gate will be fully open for after the input signal level drops below the gate sensitivity level.

DEC - The input gate decay time. Sets the gate decay time which comes after the gate hold phase.

INPUT FILTER FOLLOWER A/B “INP-FA/B”

This is an input envelope lowpass filter follower for the A and B inputs. It is made for passing through external audio. It does not react to trigs, other than you need to trig it once for it to become active.



ALEV - Controls the input volume.

GATE - The input gate sensitivity. A low value lets lower signals through the gate.

FATK - The input filter attack time. A high value makes the gate open more slowly.

FHLD - The input filter gate hold time. This parameter controls how long the gate will be fully open for after the input signal level drops below the gate sensitivity level.

FDEC - The input filter gate decay time. Sets the gate decay time which comes after the gate hold phase.

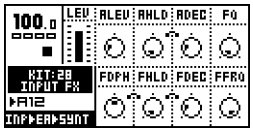
FDPH - The input filter cutoff depth value. This controls how much the filter cutoff value will be influenced by the input gate envelope.

FFRQ - The input filter base cutoff frequency.

FQ - The input filter Q value.

INPUT ENVELOPE A/B “INP-EA/B”

This is an envelope that treats external audio as a percussion source. It has two active envelopes, one for the external audio and one the extra built in lowpass filter. The envelopes are trigged using the standard drum trig buttons.



AVOL - Controls the input volume (Amplitude).

AHLD - The input amplitude hold time. A high value keeps the input amplitude gate open longer.

ADEC - The input amplitude decay time.

FQ - The input filter Q value.

FDPH - The input filter cutoff depth value. This controls how much the filter cutoff value will be influenced by the input filter envelope.

FHLD - The input filter cutoff hold time.

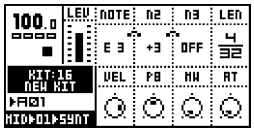
FDEC - The input filter cutoff decay time.

FFRQ - The input filter base cutoff frequency.

MID

The MIDI machines are used for controlling external MIDI gear, such as synthesizers, connected to the MIDI OUT port of the Machinedrum. There are 16 MIDI machines in total, each connected to the corresponding MIDI channel. As there is no internal audio processing fo these machines, their controls extend over the SYNTHESIS, EFFECT and ROUTING menus.

Synthesis window



NOTE - Selects the MIDI note to be triggered, ranging from C-2 to G8.

N2 - If N2 differs from 0 it adds a second note (chord) N2 number of semitones from NOTE.

N3 - If N3 differs from 0 it adds a second note (chord) N3 number of semitones from NOTE.

LEN - Sets the length of the notes.

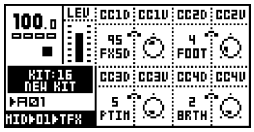
VEL - Sets the velocity for NOTE, N2 and N3.

PB - Controls the Pitch bend settings.

MW - Controls the Modulation Wheel.

AT - Controls the channel After Touch.

Track effects window



CC1D - Selects the Control Change message to be controlled by CC1V.

CC1V - Sets the value of the Control Change chosen in CC1D.

CC2D - Selects the Control Change message to be controlled by CC2V.

CC2V - Sets the value of the Control Change chosen in CC2D.

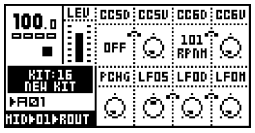
CC3V - Sets the value of the Control Change chosen in CC3D.

CC3D - Selects the Control Change message to be controlled by CC3V.

CC4V - Sets the value of the Control Change chosen in CC4D.

CC4D - Selects the Control Change message to be controlled by CC4V.

Routing window



CC5D - Selects the Control Change message to be controlled by CC5V.

CC5V - Sets the value of the Control Change chosen in CC5D.

PCHG - Performs a Program Change message between 0 and 126.

LFOS - Controls the speed of LFO of the MIDI machine.

LFOD - Controls the depth of the LFO of the MIDI machine.

LFOM - Controls the balance between the waveforms of the LFO of the MIDI machine.

CTR

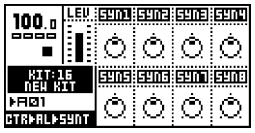
The control machines are used to automate and making it easier to control the different parameters of the sixteen available tracks as well as offering control over the stereo master effects. Note that you can use LFO's alongside the stereo master effect control machines, but not with the other control machines.

CONTROL ALL "CTR-AL"

This machine simultaneously controls the chosen parameter or parameters for all 16 tracks. Manipulating one parameter on the CTR-AL machine will affect the corresponding parameter on all 16 tracks. Note that CTRL-AL does not affect the MIDI machines or the SYNTHESIS page of RAM RECORD machines. The functionality of this machine is similar to the [FUNCTION] + DATA ENTRY knobs operation described on page 37 . The major difference is that using this machine, you can set trigs.

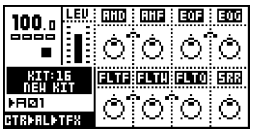
Synthesis window

This page controls the up to 8 available synthesis parameters for every machine and track.



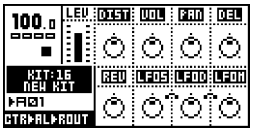
Track effects window

Here you control the track effect parameters for all tracks.



Routing window

Here you control the routing page parameters for all tracks.

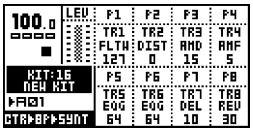


CONTROL 8 PARAMETERS “CTR-8P”

This Control machine is used for grouping together the parameters you manipulate the most into a single window. The parameters can belong to different tracks. This can be convenient in a live situation, allowing less pressing of buttons to reach the desired parameters. One CTR-8P machine can contain 8 of these track and parameter short cuts. The CTR-8P can also function as a sort of “trigless trig” since it can manipulate parameters without trigging the corresponding drum sound.

Synthesis window

This page shows an overview of all the grouped parameters, which tracks they belong to and what values they have.

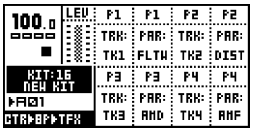


P1 - First shown is the track that P1 is assigned to. Under the displayed track, the controlled parameter is visible. Under this, the current value of the parameter is represented. Manipulating P1 will therefore manipulate the chosen parameter on the selected track.

P2-P8 - The same function as **P1**

Track effects window

In this window, together with the ROUTING menu, you assign the parameters and tracks that are going to be visible in the overview in the SYNTHESIS menu. You set up 4 of these track and parameter short cuts in the TRACK EFFECTS window.



P1 TRK - Chooses the track that will be affected by the **P1** parameter on the SYNTHESIS page.

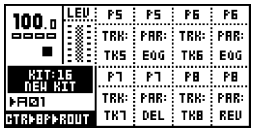
P1 PAR - Chooses which parameter that will be affected by the **P1** parameter on the SYNTHESIS page.

P2-P4 TRK - The same function as **P1 TRK**

P2-P4 PAR - The same function as **P1 PAR**

Routing window

A continuation of the content in the EFFECTS menu. The next 4 routings are made here.

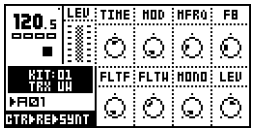


CONTROL RHYTHM ECHO DELAY “CTR-RE”

Use this control machine to control the parameters of the RHYTHM ECHO delay. The effects and routing pages look the same for all the master effect control machines, therefore they will be described only for the RHYTHM ECHO delay.

Synthesis window

This page shows the same parameters as found in the STEREO MASTER EFFECTS menu under the ECHO tab.



TIME - Controls the actual delay time. It is relative to the current tempo, and it is measured in 128th notes. For instance, for a two beat delay (8 16th notes) **TIME** should be set to 64.

MOD - Controls the delay time modulation depth.

MFRQ - Controls the delay time modulation frequency.

FB - Controls the delay feedback amount. The feedback is taken after the filter but before the out gain control. **FB** set to central position with filter totally open gives unity feedback.

FILTF - The filter base frequency parameter. For a description of the functionality of the filter, see “THE RHYTHM ECHO DELAY” on page 29.

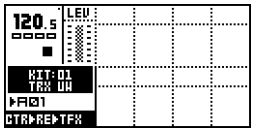
FILTW - The filter width parameter. Please refer to the text found under the heading “THE RHYTHM ECHO DELAY” on page 29 for a description of the functionality of the filter.

MONO - the feedback panning control parameter. A low value gives ping pong style delay, a high value preserves the stereo information, and a central position brings the delay feedback into the central panning position.

LEV - The out gain level control of the RHYTHM ECHO delay.

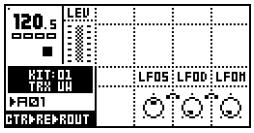
Effects window

This window is empty as no relevant controls can be found here.



Synthesis window

Here controls for the LFO of the track can be found.



LFOS - Controls the speed of LFO.

LFOD - Controls the depth of the LFO.

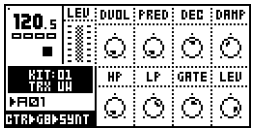
LFOM - Controls the balance between the waveforms of the LFO.

CONTROL GATE BOX REVERB "CTR-GB"

Use this control machine to control the parameters of the GATE BOX reverb. The effect and routing pages function the same way as described for the RHYTHM EHCO delay.

Synthesis window

This page shows the same parameters as found in the STEREO MASTER EFFECTS menu under the REV tab.



DVOL is the delay to reverb level parameter. This parameter allows the output of the RHYTHM ECHO to be routed into the GATE BOX reverb.

PRED is the pre-delay parameter. The direct and delay signal mix is delayed by an amount of time to give the impression of the reverbation arriving after the sound.

DEC is the decay time parameter. Decay time is the time it takes for the reverbation to die out after a sound has ended. The decay parameter is active in the range of 0.5 to 3 seconds.

DAMP is the damping control parameter. Damping decreases the high frequencies to give the impression of soft walls.

HP is a high-pass filter, filtering the output from the reverb.

LP is a low-pass filter, filtering the output from the reverb.

GATE sets the gate time. The reverbated signal is gated after this time, if the signal level is low. The maximal value for this parameter gives infinite time - in other words, the gate is off.

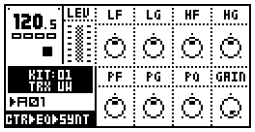
LEV is the output level parameter of the GATE BOX reberb.

CONTROL MASTER EQ "CTR-EQ"

Use this control machine to control the parameters of the MASTER EQ equalizer. The effect and routing pages function the same way as described for the RHYTHM EHCO delay.

Synthesis window

This page shows the same parameters as found in the STEREO MASTER EFFECTS menu under the EQ tab.



LF is the cut/boost frequency parameter of the low shelf filter.

LG is the low shelf gain parameter that controls how much the low frequencies should be boosted / reduced between -15dB and +15dB.

HF is the cut/boost frequency parameter of the high shelf filter.

HG is the high shelf gain parameter that controls how much the high frequencies should be boosted / reduced between -15dB and +15dB.

PF is the parametric EQ frequency parameter, that is the center frequency of the parametric EQ band.

PG is the parametric EQ gain parameter. It controls how much the parametric EQ should boost or reduce between -15dB and +15dB, at the frequency set by the "PF" parameter.

PQ is the parametric EQ Q factor. The Q controls the width of the band that is boosted or reduced by the parametric EQ. High Q-values give a narrow band.

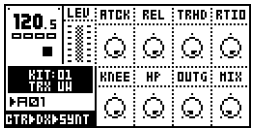
GAIN is the final out volume control. This parameter allows you to adjust the out volume of the main stereo out.

CONTROL DYNAMIX PROCESSOR "CTR-DX"

Use this control machine to control the parameters of the DYNAMIX dynamic processor. The effect and routing pages function the same way as described for the RHYTHM EHCO delay.

Synthesis window

This page shows the same parameters as found in the STEREO MASTER EFFECTS menu under the DYN tab.



ATCK controls the attack time, which is the time it takes the volume detector to react to the Attack part of the sound signal. Long attack times let fast transients through the compressor.

REL controls the release time. This is the time it takes the volume detector to react to the Release part of the sound

signal. A long release time lifts the signal level as a sound decays, flattening the dynamics.

TRHD sets the threshold level where the signal starts getting compressed (from -48 to 0dB).

RTIO controls the ratio by which the signal is compressed, when the threshold level is reached. The ratio has a value in the range 1:1 to 1:256.

KNEE controls the soft knee transition. It makes the transition between compressed and uncompressed signal smoother, by softening the knee. A low value gives a hard knee.

HP is the side chain High pass filter. This parameter high-pass filters the sidechain signal of the Compressor, so that it does not react to bass.

OUTG out gain raises the signal level. This is used to make up for the gain lost in the compressor.

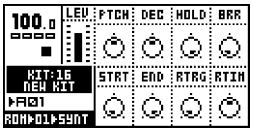
MIX controls the cross mix between the compressed signal and the original signal. A high value bypasses the DYNAMIX processor.

ROM (UW VERSIONS ONLY)

The ROM Machines contains user exchangeable samples. There are 48 ROM machines in total. Use these machines to add your personalized samples to the Machinedrum environment.

The content of the ROM machines remains in the memory of the Machinedrum after powering down the unit.

ROM MACHINES “ROM-1 - ROM-48”



PTCH - Adjusts the pitch two octaves up or down. For the first octave up or down, every third parameter step adjusts the pitch one semi-note.

DEC - The Decay time. If the sample is looped, a setting of 127 will make it loop infinitely.

HOLD - Hold the amplitude envelope open for the specified time. A value of 127 keeps the envelope open for 1 bar (16 steps). A value of 1 will keep the envelope open for 1/8 of a step.

BRR - Bit Rate Reduction. When set to 127 the sample will be of 2-bit quality.

STRT - Controls the start point of the sample. The parameter is exponential, giving a very fine control over the beginning of a sample.

END - Controls the end point of the sample. The sample will be reversed if it is set to a lower value than the STRT parameter.

RTRG - Sets the number of times a sample will retrig. If set to 127 the sample will retrig infinitely.

RTIM - Defines the time between two retrigs. The time is relative to the tempo. If the value is set to zero the RTRG parameter will not affect anything.

The ROM machines ROM-25 to ROM-48 operates slightly differently since they are optimized for loops. How the parameters differ from the other ROM machines is described below.

HOLD - Set to a value of 127 the amplitude envelope is open for 2 bars. A setting of 1 will keep the envelope open for ¼ of a step (1/16 note)

STRT - This parameter is now linear which makes it easy to find a position within a loop. In a 2-bar loop you will find each ¼ note located every 128/8 = 16 parameter steps. So for every 16 steps of the parameter you will find each beat in the loop.

END - Also linear and functions basically the same way as the STRT-parameter.

RAM (UW VERSIONS ONLY)

The RAM machines are designed for capturing sound in real time. They function a little bit different from the other machines.

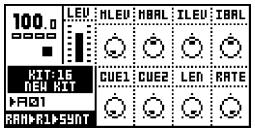
In order to capture and replay sound two different machines are needed, the RAM RECORD and the RAM PLAY machines.

The content of the RAM machines are lost when powering down the Machinedrum.

RAM RECORD “RAM-R1 - RAM-R4”

These machines are used to capture sound. The RAM RECORD machines can capture both internal sounds and external sounds. You have 4 RAM RECORD machines at your disposal.

Some DSP memory is always reserved for the RAM machines. The memory is shared with the ROM machines so the more memory left for the RAM machines, the higher will the quality of the recording be.



MLEV – Sets the level of internal sound that is rerouted from the Main outputs to the RAM RECORD machine. When set to 0 the signal will be recorded “as is”. If set to a positive value the recorded signal will increase in volume compared to the original signal. If set to a negative value the signal will decrease in volume.

MBAL – The recording is made monophonic and this parameter decides how the recording from the Main outs should be balanced.

ILEV – Sets the level of input from the external inputs. When set to 0 the signal will be recorded “as is”. If set to a positive value the recorded signal will increase in volume compared to the original signal. If set to a negative value the recorded signal will decrease in volume.

IBAL – The recording is made monophonic. This parameter decides how the recording from the external inputs should be balanced.

CUE1 – Sets the level of pre-listening for the sound coming from either the Main outputs or the external inputs. Be careful with this parameter as it can generate feedback if set too high.

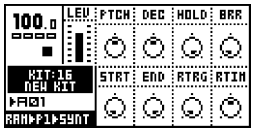
CUE2 – Sets the pre-listening level of what is going to be recorded if the RAM RECORD machine is triggered.

LEN – Defines how long the recording will be. A value of 127 will record for 2 bars. Each parameter value is ¼ of step. If running low on DSP memory, turn this value down.

RATE – Turning this down will lower the quality of the recording.

RAM PLAY “RAM-P1 - RAM-P4”

This machine is used for playing back the sound that the corresponding RAM RECORD machine has captured. It functions exactly the same way as the ROM machines 25-48.



RAM MACHINES TUTORIAL

The concept of how the RAM machines function can be a bit hard to grasp since they work so differently from the rest of the machines in the Machinedrum. Here follows a short tutorial of how to set them up for recording and playing back the sound from the main outs. This tutorial assumes you are familiar with the basic operation of the Machinedrum UserWave.

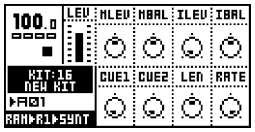
1. Make sure that the main out of Machinedrum UW is connected to your mixer or sound card. You can also plug a pair of headphones into the phones output. Compose a 1-bar pattern consisting of a bass drum, a snare drum and some hi hats. The pattern should not contain any other machines.

2. Assign the first RAM RECORD machine (RAM-R1) to track M1. This machine will be used to capture the beat.

3. Assign the first RAM PLAY machine (RAM-P1) to track M2. This machine will play back the captured sample of the RAM RECORD machine.

4. Scroll the ***SOUND SELECTION*** wheel until track M1, the track with the RAM RECORD machine, becomes active.

5. Enter the SYNTHESIS page of the RAM RECORD machine and make sure that **MLEV** is set to zero. Turn down **ILEV** to -64. Doing this you will record sound from the main outs and nothing from the external inputs. **LEN** should be set to 64 and **RATE** to 127. This will capture one bar with maximum recording quality.



6. Press the **[REC]** button and place a trig on the first step of the pattern, then press **[PLAY]**. When the <TRIG> leds of the pattern sequencer moves over the RAM RECORD trig, the machine will start to record sound. Remove the trig right after it has been trigged. This is because we don’t want the machine to record a new take. The loop is now stored in the RAM RECORD machine. It is time to play it back.

7. Scroll the ***SOUND SELECTION*** wheel until track M2, the track with the RAM PLAY machine, becomes active.

8. Make sure that the <RECORD> led is still lit and the place a trig on step 5 of the pattern sequencer. You should now hear the captured loop start playing over the already programmed beat, changing the rhythm considerably.

9.Try experimenting with the loop. Place a trig on step 9 of the pattern sequencer and parameter lock the **STRT** parameter to a value of 16. The recorded loop will now begin from a different start point further changing the style of the beat.

Appendix B: MIDI CONTROL REFERENCE

All machine parameters in the Machinedrum are accessible by MIDI control change messages. This appendix lists the available MIDI CTRL-change mappings. The default MIDI NOTE ON mappings are also listed, although these can be changed using the internal MIDI map editor.

DEFAULT MIDI MAPPINGS

hex	dec	note	track
24	36	C2	1
26	38	D2	2
28	40	E2	3
29	41	F2	4
2b	43	G2	5
2d	45	A2	6
2f	47	B2	7
30	48	C3	8
32	50	D3	9
34	52	E3	10
35	53	F3	11
37	55	G3	12
39	57	A3	13
3b	59	B3	14
3c	60	C4	15
3e	62	D4	16

hex	dec	note	pattern
40	64	E4	A01
41	65	F4	A02
43	67	G4	A03
45	69	A4	A04
47	71	B4	A05
48	72	C5	A06
4a	74	D5	A07
4c	76	E5	A08
4d	77	F5	A09
4f	79	G5	A10
51	81	A5	A11
53	83	B5	A12
54	84	C6	A13
56	86	D6	A14
58	88	E6	A15
59	89	F6	A16

This mapping can be changed in the MIDI map editor.

CTRL-CHANGE MAPPINGS

MIDI base channel + 0:

hex	dec	Parameter	Trn	Rec
08	08	Track 1 BD - Level	X	X
09	09	Track 2 SD - Level	X	X
0a	10	Track 3 HT - Level	X	X
0b	11	Track 4 MT - Level	X	X
0c	12	Track 1 BD - Mute (>0 mutes trk)	X	X
0d	13	Track 2 SD - Mute (>0 mutes trk)	X	X
0e	14	Track 3 HT - Mute (>0 mutes trk)	X	X
0f	15	Track 4 MT - Mute (>0 mutes trk)	X	X
10	16	Track 1 BD - Machine parameter 1	X	X
11	17	Track 1 BD - Machine parameter 2	X	X
12	18	Track 1 BD - Machine parameter 3	X	X
13	19	Track 1 BD - Machine parameter 4	X	X
14	20	Track 1 BD - Machine parameter 5	X	X
15	21	Track 1 BD - Machine parameter 6	X	X
16	22	Track 1 BD - Machine parameter 7	X	X
17	23	Track 1 BD - Machine parameter 8	X	X
18	24	Track 1 BD - AM Depth	X	X
19	25	Track 1 BD - AM Rate	X	X
1a	26	Track 1 BD - EQ Freq	X	X
1b	27	Track 1 BD - EQ Gain	X	X
1c	28	Track 1 BD - Filter base frequency	X	X
1d	29	Track 1 BD - Filter width	X	X
1e	30	Track 1 BD - Filter Q	X	X
1f	31	Track 1 BD - Sample rate reduction	X	X
20	32	Track 1 BD - Distortion	X	X
21	33	Track 1 BD - Volume	X	X
22	34	Track 1 BD - Pan	X	X
23	35	Track 1 BD - Delay send	X	X
24	36	Track 1 BD - Reverb send	X	X
25	37	Track 1 BD - LFO Speed	X	X
26	38	Track 1 BD - LFO Amount	X	X
27	39	Track 1 BD - LFO Shape	X	X
28	40	Track 2 SD - Machine parameter 1	X	X
..	..	...		
3f	63	...		
48	72	Track 3 HT - Machine parameter 1	X	X
..	..	...		
5f	95	...		
60	96	Track 4 MT - Machine parameter 1	X	X
..	..	...		
77	119	...		

MIDI base channel + 1:

hex	dec	Parameter	Trn	Rec
08	08	Track 5 LT - Level	X	X
09	09	Track 6 CP - Level	X	X
0a	10	Track 7 RS - Level	X	X
0b	11	Track 8 CB - Level	X	X
0c	12	Track 5 LT - Mute (>0 mutes trk)	X	X
0d	13	Track 6 CP - Mute (>0 mutes trk)	X	X
0e	14	Track 7 RS - Mute (>0 mutes trk)	X	X
0f	15	Track 8 CB - Mute (>0 mutes trk)	X	X
10	16	Track 5 LT - Machine parameter 1	X	X
..	..	...		
27	39	...		
28	40	Track 6 CP - Machine parameter 1	X	X
..	..	...		
3f	63	...		
48	72	Track 7 RS - Machine parameter 1	X	X
..	..	...		
5f	95	...		
60	96	Track 8 CB - Machine parameter 1	X	X
..	..	...		
77	119	...		

MIDI base channel + 2:

hex	dec	Parameter	Trn	Rec
08	08	Track 9 CH - Level	X	X
09	09	Track 10 OH - Level	X	X
0a	10	Track 11 RC - Level	X	X
0b	11	Track 12 CC - Level	X	X
0c	12	Track 9 CH - Mute (>0 mutes trk)	X	X
0d	13	Track 10 OH - Mute (>0 mutes trk)	X	X
0e	14	Track 11 RC - Mute (>0 mutes trk)	X	X
0f	15	Track 12 CC - Mute (>0 mutes trk)	X	X
10	16	Track 9 CH - Machine parameter 1	X	X
..	..	...		
27	39	...		
28	40	Track 10 OH - Machine parameter 1	X	X
..	..	...		
3f	63	...		
48	72	Track 11 RC - Machine parameter 1	X	X
..	..	...		
5f	95	...		
60	96	Track 12 CC - Machine parameter 1	X	X
..	..	...		
77	119	...		

MIDI base channel + 3:

hex	dec	Parameter	Trn	Rec
08	08	Track 13 M1 - Level	X	X
09	09	Track 14 M2 - Level	X	X
0a	10	Track 15 M3 - Level	X	X
0b	11	Track 16 M4 - Level	X	X
0c	12	Track 13 M1 - Mute (>0 mutes trk)	X	X
0d	13	Track 14 M2 - Mute (>0 mutes trk)	X	X
0e	14	Track 15 M3 - Mute (>0 mutes trk)	X	X
0f	15	Track 16 M4 - Mute (>0 mutes trk)	X	X
10	16	Track 13 M1 - Machine parameter 1	X	X
..	..	...		
27	39	...		
28	40	Track 14 M2 - Machine parameter 1	X	X
..	..	...		
3f	63	...		
48	72	Track 15 M3 - Machine parameter 1	X	X
..	..	...		
5f	95	...		
60	96	Track 16 M4 - Machine parameter 1	X	X
..	..	...		
77	119	...		

Appendix C: SYSEX REFERENCE

This appendix lists all Machinedrum SYSEX messages available for external control.

Conventions:

Data printed with a $ sign is written in hexadecimal format.
Data printed with a % sign is written in a binary bitfield format.

Machinedrum SYSEX messages

All SYSEX messages start with this sequence.

MIDI Byte	Purpose
$f0	SYSEX Start
$00	Europe/USA ID
$20	Europe ID
$3c	Elektron ESI ID
$02	Machinedrum ID
$00	Base channel (Padding)

A complete SYSEX message looks like this:

$f0,$00,$20,$3c,$02,$00,command,...,$f7

SYSEX global settings sysex dump:

MIDI Byte	Purpose
(SYSEX init)	
$50	Global settings dump ID
...	Global setting data bytes
$f7	SYSEX end

SYSEX global setting dump request:

MIDI Byte	Purpose
(SYSEX init)	
$51	Global setting dump request ID
%0000aaaa	Send global setting %aaaa (0 to 7) by sysex
$f7	SYSEX end

SYSEX kit sysex dump:

MIDI Byte	Purpose
(SYSEX init)	
$52	Kit dump ID
...	Kit data bytes
$f7	SYSEX end

SYSEX kit request:

MIDI Byte	Purpose
(SYSEX init)	
$53	Kit dump request ID
%00aaaaaa	Send kit number %aaaaaa (0 to 63) by sysex
$f7	SYSEX end

SYSEX unused:

MIDI Byte	Purpose
(SYSEX init)	
$54	None
$f7	SYSEX end

SYSEX set current kit name:

MIDI Byte	Purpose
(SYSEX init)	
$55	Set current kit name ID
...	16 bytes ASCII (7-bit)
$f7	SYSEX end

SYSEX set active global setting:

MIDI Byte	Purpose
(SYSEX init)	
$56	Set active global setting ID
%0000aaaa	Set global pos %aaaa (0 to 7) as active
$f7	SYSEX end

SYSEX load pattern:

```
  MIDI Byte | Purpose
------------+-----------------------------
(SYSEX init)|
        $57 | Load pattern ID
  %0aaaaaaa | Load pattern %aaaaaaa (0 to 127)
        $f7 | SYSEX end
```

SYSEX load kit:

```
  MIDI Byte | Purpose
------------+-----------------------------
(SYSEX init)|
        $58 | Load kit ID
  %00aaaaaa | Load kit %aaaaaa (0 to 63)
        $f7 | SYSEX end
```

SYSEX save kit:

```
  MIDI Byte | Purpose
------------+-----------------------------
(SYSEX init)|
        $59 | Save kit ID
  %00aaaaaa | Save kit to pos %aaaaaa (0 to 63)
        $f7 | SYSEX end
```

SYSEX set midi note to track mapping:

```
  MIDI Byte | Purpose
------------+-----------------------------
(SYSEX init)|
        $5a | Set midi note mapping ID
  %0aaaaaaa | Associate note %aaaaaaa ($0=C0)...
  %0000bbbb | ...with track %bbbb (0 to 15)
        $f7 | SYSEX end
```

SYSEX assign machine:

```
  MIDI Byte | Purpose
------------+-----------------------------
(SYSEX init)|
        $5b | Load machine ID
  %0000aaaa | Select track %aaaa (0 to 15)...
  %0bbbbbbb | ...and assign machine %bbbbbbb number (see
            | list below)
  %0000000c | 0 = SPS-1, 1 = SPS-1UW (optional parameter)
  %000000dd | 0 = init synthesis, 1 = init synthesis +
            | effects, 2 = init synthesis + effects +
            | routing (optional parameter)
        $f7 | SYSEX end
```

```
00 GND-EMPTY | 16 TRX-BD | 32 EFM-BD | 48 E12-BD |
01 GND-SIN   | 17 TRX-SD | 33 EFM-SD | 49 E12-SD |
02 GND-NS    | 18 TRX-XT | 34 EFM-XT | 50 E12-HT |
03 GND-IM    | 19 TRX-CP | 35 EFM-CP | 51 E12-LT |
             | 20 TRX-RS | 36 EFM-RS | 52 E12-CP |
             | 21 TRX-CB | 37 EFM-CB | 53 E12-RS |
             | 22 TRX-CH | 38 EFM-HH | 54 E12-CB |
             | 23 TRX-OH | 39 EFM-CY | 55 E12-CH |
             | 24 TRX-CY |           | 56 E12-OH |
             | 25 TRX-MA |           | 57 E12-RC |
             | 26 TRX-CL |           | 58 E12-CC |
             | 27 TRX-XC |           | 59 E12-BR |
             | 28 TRX-B2 |           | 60 E12-TA |
             |           |           | 61 E12-TR |
             |           |           | 62 E12-SH |
             |           |           | 63 E12-BC |

   64 P-I-BD | 80 INP-GA | 96 MID-01 |112 CTR-AL |
   65 P-I-SD | 81 INP-GB | 97 MID-02 |113 CTR-8P |
   66 P-I-MT | 82 INP-FA | 98 MID-03 |
   67 P-I-ML | 83 INP-FB | 99 MID-04 |
   68 P-I-MA | 84 INP-EA |100 MID-05 |
   69 P-I-RS | 85 INP-EB |101 MID-06 |
   70 P-I-RC             |102 MID-07 |
   71 P-I-CC             |103 MID-08 |
   72 P-I-HH             |104 MID-09 |120 CTR-RE
                         |105 MID-10 |121 CTR-GB
                         |106 MID-11 |122 CTR-EQ
                         |107 MID-12 |123 CTR-DX
                         |108 MID-13 |
                         |109 MID-14 |
                         |110 MID-15 |
                         |111 MID-16 |
```

If c = 1 the numbers below apply

```
 00 ROM-01| 16 ROM-17| 32 RAM-R1| 48 ROM-33
 01 ROM-02| 17 ROM-18| 33 RAM-R2| 49 ROM-34
 02 ROM-03| 18 ROM-19| 34 RAM-P1| 50 ROM-35
 03 ROM-04| 19 ROM-20| 35 RAM-P2| 51 ROM-36
 04 ROM-05| 20 ROM-21|          | 52 ROM-37
 05 ROM-06| 21 ROM-22| 37 RAM-R3| 53 ROM-38
 06 ROM-07| 22 ROM-23| 38 RAM-R4| 54 ROM-39
 07 ROM-08| 23 ROM-24| 39 RAM-P3| 55 ROM-40
 08 ROM-09| 24 ROM-25| 40 RAM-P4| 56 ROM-41
 09 ROM-10| 25 ROM-26|          | 57 ROM-42
 10 ROM-11| 26 ROM-27|          | 58 ROM-43
 11 ROM-12| 27 ROM-28|          | 59 ROM-44
 12 ROM-13| 28 ROM-29|          | 60 ROM-45
 13 ROM-14| 29 ROM-30|          | 61 ROM-46
 14 ROM-15| 30 ROM-31|          | 62 ROM-47
 15 ROM-16| 31 ROM-32|          | 63 ROM-48
```

SYSEX set track routing:

```
  MIDI Byte | Purpose
------------+-----------------------------
(SYSEX init)|
        $5c | Set track routing ID
  %0000aaaa | Route track %aaaa (0 to 15)...
  %00000bbb | ...to output specified by %bbb
        $f7 | SYSEX end

  b:0 , OUTPUT A
  b:1 ,    -   B
  b:2 ,    -   C
  b:3 ,    -   D
  b:4 ,    -   E
  b:5 ,    -   F
  b:6 ,    -   MAIN (stereo pair A/B)
```

SYSEX set Rhythm Echo parameter:

```
  MIDI Byte | Purpose
------------+-----------------------------
(SYSEX init)|
        $5d | Set delay tab parameter ID
  %00000aaa | Target parameter %aaa (0 to 7)
  %0bbbbbbb | Set value to %bbbbbbb (0 to 127)
        $f7 | SYSEX end
```

SYSEX set Gate box parameter:

```
  MIDI Byte | Purpose
------------+-----------------------------
(SYSEX init)|
        $5e | Set reverb parameter ID
  %00000aaa | Target parameter %aaa (0 to 7)
  %0bbbbbbb | Set value to %bbbbbbb (0 to 127)
        $f7 | SYSEX end
```

SYSEX set the EQ parameter:

```
  MIDI Byte | Purpose
------------+-----------------------------
(SYSEX init)|
        $5f | Set eq parameter ID
  %00000aaa | Target parameter %aaa (0 to 7)
  %0bbbbbbb | Set value to %bbbbbbb (0 to 127)
        $f7 | SYSEX end
```

SYSEX set Dynamix parameter:

```
  MIDI Byte | Purpose
------------+-----------------------------
(SYSEX init)|
        $60 | Set dynamics parameter ID
  %00000aaa | Target parameter %aaa (0 to 7)
  %0bbbbbbb | Set value to %bbbbbbb (0 to 127)
        $f7 | SYSEX end
```

SYSEX set tempo:

MIDI Byte	Purpose
(SYSEX init)	
$61	Set tempo ID
%0aaaaaaa	Upper bits
%0bbbbbbb	Lower bits
$f7	SYSEX end

Note: Tempo = %aaaaaaabbbbbbb / 24, max 300 BPM, min 30 BPM

SYSEX set LFO:

MIDI Byte	Purpose
(SYSEX init)	
$62	Set LFO ID
%0aaaabbb	%aaaa=LFO number (0 to 15), %bbb=parameter number (0-7)
%0ccccccc	parameter value
$f7	SYSEX end

Note: You can also use control change to set LFO; speed, amount & shapemix.

SYSEX unused:

MIDI Byte	Purpose
(SYSEX init)	
$63	None
$f7	SYSEX end

SYSEX reset midi note map:

MIDI Byte	Purpose
(SYSEX init)	
$64	Reset midi note map to Elektron's mapping
$f7	SYSEX end

SYSEX set trig group:

MIDI Byte	Purpose
(SYSEX init)	
$65	Set trig group ID
%0000aaaa	Trigger track %aaaa (0 to 15)
%0000bbbb	track %bbbb (0 to 15) to be triggered
$f7	SYSEX end

SYSEX set mute group:

MIDI Byte	Purpose
(SYSEX init)	
$66	Set mute group ID
%0000aaaa	Mute control track %aaaa (0 to 15)
%0000bbbb	track %bbbb (0 to 15) to be muted
$f7	SYSEX end

SYSEX pattern dump:

MIDI Byte	Purpose
(SYSEX init)	
$67	Pattern dump ID
...	Pattern data bytes (see separate documentation)
$f7	SYSEX end

SYSEX pattern dump request:

MIDI Byte	Purpose
(SYSEX init)	
$68	Pattern request ID
%0aaaaaaa	Send pattern %aaaaaaa
$f7	SYSEX end

SYSEX song dump:

MIDI Byte	Purpose
(SYSEX init)	
$69	Song dump ID
...	Song data bytes (see separate documentation)
$f7	SYSEX end

SYSEX song request:

MIDI Byte	Purpose
(SYSEX init)	
$6a	Song request ID
%000aaaaa	send song %aaaaa (0 to 31)
$f7	SYSEX end

SYSEX set receive position for dump:

MIDI Byte	Purpose
(SYSEX init)	
$6b	Receive position ID
%000aaaab	receive pos on type 0001=global 0010=kit 0100=pattern 1000=song
%0ccccccc	to b=0 => pos ccccccc, b=1 original position
%0ddddddd	for ddddddd sysexes of this type
$f7	SYSEX end

Note: Same as setting the receive parameters in the SYSEX menu.

SYSEX load song:

MIDI Byte	Purpose
(SYSEX init)	
$6c	Load song ID
%000aaaaa	Load song %aaaaa (0 to 31)
$f7	SYSEX end

SYSEX save song:

MIDI Byte	Purpose
(SYSEX init)	
$6d	Save song ID
%000aaaaa	Save song to position %aaaaa (0 to 31)
$f7	SYSEX end

SYSEX status request:

MIDI Byte	Purpose
(SYSEX init)	
$70	Request status ID
%00aaaaaa	Status for parameter %aaaaaa (see list below)
$f7	SYSEX end

0x01 Current global slot (0 to 7)
0x02 Current kit number (0 to 63)
0x04 Current pattern number (A1=0, A2=1, ... B1=16, ...)
0x08 Current song number (0 to 31)
0x10 Current sequencer mode (pattern mode=0, song mode=1)
0x20 Current lock mode (classic=0, extended=1)

SYSEX set status:

MIDI Byte	Purpose
(SYSEX init)	
$71	Set status ID
%00aaaaaa	Set parameter %aaaaaa to ...
%0bbbbbbb	... value %bbbbbbb
$f7	SYSEX end

0x01 Current global slot (0 to 7)
0x02 Current kit number (0 to 63)
0x04 Current pattern number (A1=0, A2=1, ... B1=16, ...)
0x08 Current song number (0 to 31)
0x10 Current sequencer mode (pattern mode=0, song mode=1)
0x20 Current lock mode (classic=0, extended=1)
0x22 Current track (0 to 15)

SYSEX status response:

MIDI Byte	Purpose
(SYSEX init)	
$72	Status response ID
%00aaaaaa	Parameter %aaaaaa has ...
%0bbbbbbb	... value %bbbbbbb (see list below)
$f7	SYSEX end

0x01 Current global slot (0 to 7)
0x02 Current kit number (0 to 63)
0x04 Current pattern number (A1=0, A2=1, ... B1=16, ...)
0x08 Current song number (0 to 31)
0x10 Current sequencer mode (pattern mode=0, song mode=1)
0x20 Current lock mode (classic=0, extended=1)
0x22 Current track (0 to 15)

SYSEX set UW sample name:

MIDI Byte	Purpose
(SYSEX init)	
$73	Set sample name ID
%00aaaaaa	Sample number (0-47 on mkII, 0-31 on mkI)
...	4 bytes ASCII name (7-bit)
$f7	SYSEX end

Note 1: This affects samples in the current samplebank only.

Note 2: During sample dumps, sysex data can be sent in between the sample dump header and the sample data. In this scenario, the sample number is ignored and is instead read from the sample dump header.

TURBOMIDI PROTOCOL SYSEX DESCRIPTION

All TurboMIDI SYSEX messages start with this sequence:

MIDI Byte	Purpose
$f0	SYSEX Start
$00	Europe/USA ID
$20	Europe ID
$3c	Elektron ESI ID
$00	Generic Elektron product ID
$00	Base channel (Padding)

A complete SYSEX message looks like this:

$f0,$00,$20,$3c,$00,$00,command,...,$f7

SYSEX turbomidi speed request

MIDI Byte	Purpose
(SYSEX init)	
$10	Speed request ID
$f7	SYSEX end

SYSEX turbomidi speed answer

MIDI Byte	Purpose
(SYSEX init)	
$11	Speed answer ID
%aaaaaaaa	bit 0 = speed 2, bit 1, = speed 3.3...
%00000bbb	bit 0 = speed 13.3x, bit 1 = speed 16x, bit 2 = speed 20x
%cccccccc	contains certified speed bits
%00000bbb	contains certified speed bits
$f7	SYSEX end

SYSEX turbomidi speed negotiation (master)

MIDI Byte	Purpose
(SYSEX init)	
$12	Speed negotiaton ID
%0000aaaa	Speed 1 value
%0000bbbb	Speed 2 value
$f7	SYSEX end

SPEED1 >= SPEED2 (= if certified)
SPEED1, SPEED2 = 1 requires no handshaking

SYSEX turbomidi speed acknowledgement (slave)

MIDI Byte	Purpose
(SYSEX init)	
$13	Speed acknowledgment ID
$f7	SYSEX end

Acknowledge sent upon SPEEDNEG, always sent at 1xMIDI_SPEED
After speed acknowledgement is received SPEED1 is set on both the master and slave device

SYSEX turbomidi speed test (master)

MIDI Byte	Purpose
(SYSEX init)	
$14	Speed test (master) ID
$55	
$55	
$55	
$55	
$00	
$00	
$00	
$00	
$f7	SYSEX end

Before the speedtest the master should allow the slave some breathing by sending 16 0x00 bytes to allow setting of speed and resetting of UART

SYSEX turbomidi speed result (slave)

MIDI Byte	Purpose
(SYSEX init)	
$15	Speed test (result) ID
$55	
$55	
$55	
$55	
$00	
$00	
$00	
$00	
$f7	SYSEX end

SYSEX turboMIDI speed test 2 (master)

MIDI Byte	Purpose
(SYSEX init)	
$16	Speed test 2 (master) ID
$f7	SYSEX end

SYSEX turboMIDI speed result 2 (slave)

MIDI Byte	Purpose
(SYSEX init)	
$17	Speed test 2 (result) ID
$f7	SYSEX end

After reception of "speed result 2" SPEED2 is set on both the master and slave device.

Possible Speed and Max Speed parameters:

SPEED	x 31.25 kbit
1	1
2	2
3	3.33
4	4
5	5
6	6.66
7	8
8	10
(9)	13.3
(10)	16
(11)	20

Values within parentheses are not supported

Active sensing:
Active sensing should be sent from any device supporting Turbo MIDI whenever a higher speed is used (TM-1 approx 150ms between).
If a Turbo MIDI device receives active sensing and then active sensing is lost for more than 300ms the device will revert to normal MIDI speed.

Negotiation Timing:

Length of master timeouts: 30 ms minimum
Length of slave timeouts: 15ms minimum, 25 ms maximum

The timeout is for a byte, not a message, a message could take 15xN ms to reach the slave.

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